

Forest Plan  
Monitoring and Evaluation Report  
FISCAL YEAR 2000  
September 2001



# Kootenai National Forest

United States  
Department  
Of Agriculture



Forest Service  
Kootenai National Forest

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## SUMMARY

### INTRODUCTION

The Kootenai Forest Plan was approved on September 14, 1987. It established management direction for a 10-15 year period that began on October 1, 1987 (Fiscal Year (FY) 1988). This direction was the result of a comprehensive analysis of land capabilities, public issues, and environmental effects along with a balancing of legal requirements.

We have completed the monitoring of Forest Plan implementation for FY00. This report evaluates the field data collected by the end of September 30, 1999 that pertain to the 14 monitoring items reported annually. Our monitoring and evaluation process is shown in Chapter IV of the 1987 Kootenai National Forest Land and Resource Management Plan (Forest Plan).

We have completed thirteen years of implementing the Forest Plan. Information from our monitoring will help identify what we need to change during Forest Plan revision. We have found some methods work well, and some do not. We found that some of our projections were accomplished and some have not been. The summary explains the Forest Plan itself, describes the monitoring methods, and summarizes the results of the annual monitoring items.

### FOREST PLAN DECISIONS

The Forest Plan is a set of decisions that guide management of the Forest. Taken broadly, it contains three types of decisions:

- **Goals, Objectives, and Desired Conditions** (pages II-1 through II-17 of the Forest Plan) provide general direction regarding where we should be headed as we put the Plan into practice.
- **Standards** (pages II-20 through II-33, Chapter III of the Forest Plan, and Forest Plan amendments) tell us how to put the Plan into practice, or give us conditions we must meet while we implement the Plan.
- **Land Allocation – Management Areas (MAs)**, as described in the Forest Plan Chapter III and displayed on the Forest Plan Map, are those areas of the Forest that are allocated for different types of land management and resource production.

## MONITORING

As we have found over the last thirteen years, land management occurs in complex and changing situations, and our results will not always be totally predictable, definitive, or certain. Many things, including natural events that cannot be predicted, affect management results.

The purpose of monitoring is to determine answers to the following questions: Are we doing what the Plan envisioned (implementation monitoring)? Are we seeing the effects and outputs predicted in the Plan (effectiveness monitoring)? Are the standards working (validation monitoring)? Do we need to adjust practices to meet the standards? Does the monitoring process need adjusting?

The Districts or responsible Forest Staff areas at the Supervisor's Office report monitoring data for most items annually. Monitoring forms are used to assist in collecting consistent data from the various sources. These work forms are on file in the Planning Section at the Kootenai Supervisors Office.

Monitoring and evaluation information will be used as we begin Forest Plan revision. Part of the reason we decided to issue a "Notice of Intent" to revise the Forest Plan, which was issued in November of 1996, was because of our findings in the monitoring program. A new "Notice of Intent" is scheduled to be filed towards the end of the calendar year. Work towards revision is proceeding under the old 1982 regulations while a new set of regulations are being prepared and approved.

## **SUMMARY OF MONITORING RESULTS**

### **T & E Species Habitat (C-7):**

- **Gray Wolf:** The Kootenai National Forest makes up a small portion of the Northwest Montana Wolf Recovery Area. The recovery goal for this recovery area is 10 wolf packs. In FY00, reports of wolf sightings continued at about the same level as recent years, but sightings were more localized near the areas of known packs. Sightings were reported on the Fortine and Libby Ranger Districts where at least four and possibly five packs occur. The following are the identified wolf packs on the Kootenai: Murphy Lake, Graves Creek, Little Wolf, and Wigwam. There is also a possible pack in the upper Thompson River/Silver Butte area that the US Fish and Wildlife Service is presently trying to confirm through trapping and radio collaring. The components of wolf habitat on the Kootenai did not change significantly in FY00 compared to previous years. Big game habitat treatments and wildfires during the year may result in long term habitat benefits for wolves. Big game populations continue to rebound after the severe winter of 1996-97, and this should provide adequate prey resources for continued growth in the wolf population.

- **Bald Eagle:** The Montana Bald Eagle Management Plan (MBEWG, 1994) and the Pacific States Bald Eagle Recovery Plan (USFWS, 1986) provide guidance for bald eagle recovery. Bald eagle habitat is generally within one mile of major lakes and rivers. Habitat quality and quantity on the Kootenai is stable, and may be increasing in the long term, as potential nest trees mature. The survey results for FY00 are slightly below the long-term (16 year) average since records have been kept. Nesting surveys show the FY00 nesting eagle population continuing at similar levels as the past few years. The USFWS believes the bald eagle has achieved recovery goals and they have proposed removing them from the threatened species list.
- **Grizzly Bear:** The Kootenai National Forest contains portions of two grizzly bear recovery zones: the Cabinet-Yaak Ecosystem (CYE) and the Northern Continental Divide Ecosystem (NCDE). About 72 percent of the CYE is located on the western portion of the Forest and about 4 percent of the NCDE is located in the extreme northeast corner. Each of these ecosystems is further subdivided into smaller areas for analysis and monitoring, known as bear management units (BMUs). Grizzly bear habitat effectiveness went down in 4 BMUs and up in 11 BMUs in FY00 compared to FY99. Overall, grizzly bear habitat effectiveness remained about the same as in FY99, and is above the desired level of 70 percent Forest-wide. Seventy-two percent of BMUs meet desired 70 percent habitat effectiveness level. Emergency fire suppression activities temporarily increased road densities and reduced core in some BMUs. Emergency consultation with USFWS was conducted for these activities. Sightings of female grizzly bears with cubs were up in FY00, and the six-year average was up as well. Overall, open and total road densities declined slightly during the year, although road openings for emergency fire suppression temporarily increased road densities in some BMUs. Preliminary population trend analysis including the 2000 mortalities indicates that the grizzly bear population in the CYE may be slightly declining, although small sample sizes and wide confidence intervals prohibit statistical confirmation.
- **White Sturgeon** The USFWS Recovery Plan for the Kootenai River white sturgeon was signed September 30, 1999. The short-term goals of the Plan are to reestablish natural reproduction and prevent extinction of the species. Long-term goals include providing suitable habitat conditions and restoring a natural age-class structure and an effective population size. Delisting of this population is estimated to take at least 25 years following the approval of the Plan. The Recovery Plan for the white sturgeon outlines a comprehensive set of actions needed to begin the recovery process. The Plan does not identify actions or objectives that directly affect management of the Kootenai National Forest. However, under the Endangered Species Act (Section 7(a)(1)), the Forest is obligated to use its authorities to aid in the recovery process and to consult with the USFWS on all proposed or authorized activities. All proposed projects and activities evaluated by the forest in FY00 were found to have No Effect on the species.
- **Bull Trout:** The Kootenai National Forest continues to consult with the USFWS on all ongoing activities under Section 7(a)(1) of the Endangered Species Act. During FY00 the Forest consulted on all proposed activities. The Forest has worked closely with the five other western Montana National Forests, Bureau of Land Management and the USFWS to develop Programmatic Biological Assessments for stream surveys, road maintenance, timber stand improvement, trail maintenance, and recreational site maintenance. The Forest also prepared watershed baselines for the four sub-populations supported on Kootenai National Forest lands for

submission to the USFWS. The USFWS is continuing its work towards development of a recovery plan with input for the Forest as requested. The Forest continues to work closely with Montana Fish Wildlife and Parks as well as the USFWS to determine distribution and abundance of bull trout within the boundaries of the Kootenai National Forest. White Pine Creek was added to the list of bull trout habitat with the discovery of a single sub-adult in FY00.

**Range Use (D-1):** Livestock use on the Kootenai was anticipated to be about 12,600 Animal Unit Months (AUMs) per year. The FY00 level of grazing use was 9,032 AUMs or 72 percent of the projected level. Monitoring indicates that riparian protection measures identified in the new grazing permits are being implemented. During the last thirteen years, grazing use has averaged 85 percent of projected use, which is within the range anticipated in the Plan. Permittee requests for non-use and Forest requests to defer grazing to prevent stream bank deterioration and over grazing account for use levels being lower than the Plan projected. In review of this monitoring item, no changes are needed to the Forest Plan at this time. During Forest Plan revision, the status of allotments will be reviewed.

**Noxious Weed Infestations (D-2):** The Forest Plan states 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. Monitoring indicates that several noxious weeds have increased more than 10 percent in the number of acres affected and some have had a 10 percent or more increase in density of existing infestations since the Forest Plan was signed in 1987. In addition, with the discovery of several new invaders over the last several years, it is apparent that the diversity of noxious weed species has increased. Based on these observations, this monitoring item is outside the range prescribed in the Forest Plan. There are several “control” measures being implemented, which should help improve the noxious weed situation on the Forest. It is recommended that no changes be made in the Forest Plan, but that considerable attention be given to the problem during Forest Plan revision.

**Allowable Sale Quantity (ASQ):** The Forest’s projected total maximum timber sell volume for the decade from suitable management areas is 2,270 million board feet (MMBF), which is an average of 227 MMBF per year. In addition, 60 MMBF was estimated to be sold from unsuitable management areas, averaging 6 MMBF per year. Sell volumes have declined from 200 MMBF per year to about 41 MMBF per year between FY88 and FY00. The average annual amount sold has been 106.1 MMBF from suitable lands, and 1.5 MMBF from unsuitable lands. This actual sell volume is well below the ASQ limit as set in the Plan. In the past six years, additional factors have influenced the timber sales program. The most significant was additional streamside protection measures as required by the Inland Native Fish (INFS) Decision of July, 1995. Also, the USFWS amended biological opinion for grizzly bear recovery was issued July, 1995 and changed how recovery processes would take place on the Forest. In general, it has become more difficult to plan and execute sales due to public controversy, scheduling requirements necessary to meet resource needs, and a shift to a higher level of ecosystem management and forest health issues.

The Forest has not exceeded the ASQ in 12 years of implementation. Large changes in the actual program levels versus projections of the Forest Plan indicate that revision of the Plan will need to address the sustainability of the timber sale program in addition to the sustainability of ecosystems. This has been identified as a critical issue in scoping for Forest Plan revision.

**Acres of Timber Sold for Timber Harvest (E-2):** The Forest Plan projected 15,740 acres of annual regeneration harvests to achieve the ASQ. During FY00, the acreage sold for regeneration harvest was highest for MA 15, while five other suitable timber MAs (11, 12, 14, 16, and 17) continued to be well below Forest Plan projected amounts. Additional harvest occurred in FY00, but was either salvage or intermediate harvest that did not result in a regenerated stand.

Many of the factors affecting this monitoring item are similar to those affecting item E-1, ASQ. As stated in the evaluation for that item, wildlife habitat management, watershed concerns, litigation, appeals, deferrals, and changes in management area designation based on field verification have all affected the potential to meet the Plan's projected regeneration harvest.

It is apparent that the acres sold for regeneration harvest will not meet the acreage projected in the Forest Plan. The upcoming revision of the Plan will provide the opportunity to assess appropriate levels of harvest volume and acreage in line with sustainable ecosystem management principles and new planning regulations.

**Suitable Timber Management Area (MA) Changes (E-3):** Management areas (MAs) are validated during site-specific project analysis. When inaccuracies are found, MA boundaries are corrected to keep the Forest Plan MA map current.

Acreage losses occurred in MA 12, 14, 16 and 17, while MA 11 and 15 gained acreage in FY00. Total net loss in the suitable land in FY00 was 902 acres. Most of these MA changes were made in the process of designating MA 13 and other old growth management areas. This monitoring item is outside the prescribed range for MAs 11, 15 and 16 (more than 5,000 acres of cumulative change for any of these suitable MAs).

The degree to which changes have been made to management area designations indicates continuing validation in Forest Plan MAs. The change in the suitable management area category of close to 60,000 acres amounts to approximately 3 percent of the total suitable base. During revision of the Forest Plan, sustainability and ASQ calculations will be made using the validated management areas. An assessment of the effect of changed management area designations will also be done during the revision process.

**Timber Harvest Deferrals (E-7):** To determine the effect of harvest deferrals on the timber sale program, monitoring is done in two different categories. Category A deferrals are those that result from our project-specific conclusions. Category B deferrals are those that result from an externally imposed situation. There were no deferred acres in FY00.

**Clear Cut Acres Sold (E-9):** The acres sold for clearcut harvest declined from FY90 to FY00, with the exception of FY96. In that FY, the amount of clear cutting increased primarily due to emphasis on salvaging fire-killed timber created by the 1994 fires and dead lodgepole pine killed by the mountain pine beetle epidemic. In FY00 the amount of clearcutting declined again resulting in a 97 percent decrease from the baseline year of 1988. The Forest will continue to monitor this item, but the Chief's goal for reducing clearcutting has been fully met.

**Riparian Areas (C-9):** Riparian zones are being identified and mapped as part of Forest Plan implementation. Forest Plan Appendix 26, Riparian Area Guidelines, and INFS direction are being

followed. After increased emphasis over the last five years, riparian areas discovered during layout and sale administration are being identified and protected. Review of this portion of the monitoring item indicates we are successfully applying riparian considerations to projects. We are effectively applying the Riparian Area Guidelines, INFS direction, and riparian BMPs on projects; therefore, we are on-track with the Forest Plan.

**Soil and Water Conservation Practices (F-1):** FY00 BMP monitoring on the Forest involved two different efforts: 1) BMP monitoring done by Kootenai Forest personnel during their normal work activities; 2) BMP monitoring coordinated by the Forestry division, Department of Natural Resources and Conservation (DNRC), as part of a larger Statewide Forestry BMP Audit. Thirty-two projects had implementation monitoring evaluations, and 28 projects had effectiveness evaluations accomplished in FY00 by KNF personnel. Implementation evaluations were completed for 169 BMPs and implementation evaluations met the requirement of acceptable over 98 percent of the time. Effectiveness evaluations in FY00 met the requirement of acceptable almost 96 percent of the time. The FY00 State BMP Team audited a total of 236 BMPs on the Kootenai NF. Implementation evaluations met the requirements of acceptable or better 95% of the time while 5% were rated unacceptable or worse. Effectiveness evaluations met the requirements of acceptable or better 98% of the time and only 2% were unacceptable or worse. As a result of these monitoring efforts, there were key findings identified that will strengthen on-the-ground practices.

No changes to the Forest Plan are needed at this time. The Forest will continue to improve the BMP process and program that emphasizes training, monitoring, implementation, evaluation, documentation, tracking and completion of the feedback loop to improve resource protection.

**Water Yield Increases (F-3):** In FY00, the water yield model was used to estimate the peak flow increase on 135,835 acres of both National Forest and private land. Most of these watersheds have been analyzed in previous years and include many acres of private land. Of the total area analyzed during the fiscal year, 5 percent of the acres exceed Forest water yield guidelines. Channel damage has not necessarily occurred in watersheds shown to be exceeding water yield guidelines since this monitoring item is based on computer modeling and not field observations and measurements.

Approximately 2,000,000 acres have been analyzed for water yield conditions on the Kootenai since 1988. Of this total, 1,609,000 acres (78 percent) were found to be at or below the guidelines and 459,000 acres (22 percent) were found to be over guidelines according to the most recent analysis in each area, which could be up to twelve years ago.

This monitoring item continues to be off-track with the Forest Plan. It is important to note, however, that when projects are proposed in watersheds that are over the standard, they are designed to improve the long-term watershed condition, are rescheduled, or are dropped (See Monitoring Items E-1 and E-7). This monitoring item shows that water yield calculations and stream channel analysis are an important part of the analysis needed before projects can be implemented.

**Emerging Issues (H-2):** This item identifies those issues that appear to be developing since the Forest Plan was initiated, and also monitors the original Forest Plan issues that are still of concern. Emerging issues include: road maintenance, road closures and access; declining level of timber harvest; reducing the level of natural fuels on forest service lands; an increasing demand for use of national forest system lands; and rural community development.

These emerging issues will be reviewed during Forest Plan revision to determine if and how they should be resolved.

**Forest Plan Costs (H-3):** Timber sales unit costs for FY00 decreased from the average during the preceding years. However, costs are more than two times greater than projected, which is well outside the +/- 10 percent range prescribed in the Plan. This increase is due to the increasing complexity in timber sale preparation, along with a concurrent decrease in the amount of timber volume being sold. Timber road unit costs were down from the average of the preceding years and are actually lower than the cost predicted in the Forest Plan. The reduction in unit costs is reflective of a reduced amount of road construction and reconstruction. Reforestation unit costs were much higher than the average of preceding years and approximately 60 percent higher than the projected Forest Plan amount. As discussed in preceding monitoring reports, since reforestation is a relatively large component of the timber program, this additional cost is a significant change in the economic efficiency levels of the Forest. Precommercial thinning unit costs continue to stay well below projected costs. Since unit costs have increased significantly in timber sale preparation, timber roads, and reforestation, there will be a need to factor in such changes during Forest Plan revision. During the revision process, cost efficiency analysis will include these elements and others as appropriate.

**Forest Plan Budget (H-4):** As in prior years, there is a great deal of variation in the level of funding for various program areas in comparison to the projected amounts. Notable areas where funding has increased beyond expected are in fire, fuels management, range, co-op law enforcement, tree improvement, salvage sales, and trail and recreation facility construction. Most other program areas remain below projected budget levels. However, given major trends now seen since 1988, it is apparent that many programs and costs have changed substantially, and the Forest Plan predictions are no longer valid. This analysis will be helpful in budget analysis for Forest Plan revision.

**Project Specific Amendments (Appendix C):** Project specific amendments are changes in a standard that only apply to that project. They do not change the standard for the long term. The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard the Forest Supervisor may approve an exception to that standard for the project". There were three timber sale projects with project-specific amendments that were approved by the Forest supervisor. There were no projects with openings over 40 acres, and no programmatic amendments in FY00.

## WILDLIFE & FISHERIES: T & E Species Habitat; Monitoring Item C-7

**ACTION OR EFFECT TO BE MEASURED:** Provide habitat adequate to ensure Kootenai NF's contribution to recovery of Threatened and Endangered (T&E) Species including: Gray Wolf, Bald Eagle, Grizzly Bear, Bull Trout and White Sturgeon.

**VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:** Any downward population trend. Any Forest wide decrease in habitat quantity or quality. Failure to meet recovery plan goals for the Kootenai NF.



**Purpose:** This monitoring item was established to help ensure that the Kootenai National Forest contributes to the recovery of listed threatened and endangered species. The Forest Plan requires that this item be reported annually. The expected precision and reliability of the information are high and moderate, respectively.

### **Evaluation:**

**Gray Wolf:** The Wolf Recovery Plan (USFWS, 1987) provides guidance for the recovery of the gray wolf. The Kootenai National Forest is part of the Northwest Montana Wolf Recovery Area. The recovery goal for this recovery area is 10 wolf packs.

In 2000, reports of wolf sightings continued at about the same level as recent years, but sightings were more localized near the areas of known packs. Sightings were reported on the Fortine and Libby Ranger Districts where at least 4 and possibly 5 packs occur.

The following are the identified wolf packs on the Kootenai: Murphy Lake, Grave Creek, Little Wolf, and Wigwam. There is also a possible pack in the upper Thompson River/Silver Butte area that the U.S. Fish and Wildlife Service is presently trying to confirm through trapping and radio collaring. Local residents in this area have repeatedly observed wolves. It is possible these are surviving wolves from the former Thompson River pack. Wolves from each of the known packs spend a portion of their time on the Forest and the remainder on other National Forests, State, or private lands. The Wigwam pack spends a majority of its time in Canada, and USFWS does not count it towards the 10 pack recovery goal for northwestern Montana.

The following is a brief summary of each of the known wolf packs during 2000:

Murphy Lake pack – 3 wolves had active radio collars at the beginning of the year, but 2 of these were illegally killed during the spring. Seven pups were confirmed produced. Two of the pups were radio-collared in the fall, but one was killed by a train in December, leaving 2 radioed animals in the pack. At year end, only 2 adults and 2 pups could be confirmed in the pack.

Grave Creek pack - 2 wolves were radio-collared at the beginning of the year, but 1 of these died of unknown causes in March. Denning was not confirmed but was suspected. In May, a yearling was captured and radio-collared but apparently dispersed from the territory in July. At year-end, 2 adults and 1 pup were confirmed in the pack. This pack currently does not count towards U.S. Fish and Wildlife Service recovery goals, because a minimum of 2 adults and 2 pups are required.

Wigwam pack – the one member of this pack that wore a radio collar died to unknown causes in Canada during the year. No radioed animals currently exist in the pack, and intensive monitoring is not being conducted. Informal sightings during the fall indicated at least 4 animals in the pack. The

pack spends a majority of its time in Canada, and USFWS does not count it towards the 10 pack recovery goal for northwestern Montana.

**Little Wolf pack** – This pack began killing livestock during the year, and 2 wolves were shot by control agents in March. In July, control agents also shot the alpha male, and another wolf was apparently illegally shot in July. No wolves in the pack are radio-collared, but tracks of possibly 5 pack members have been observed.

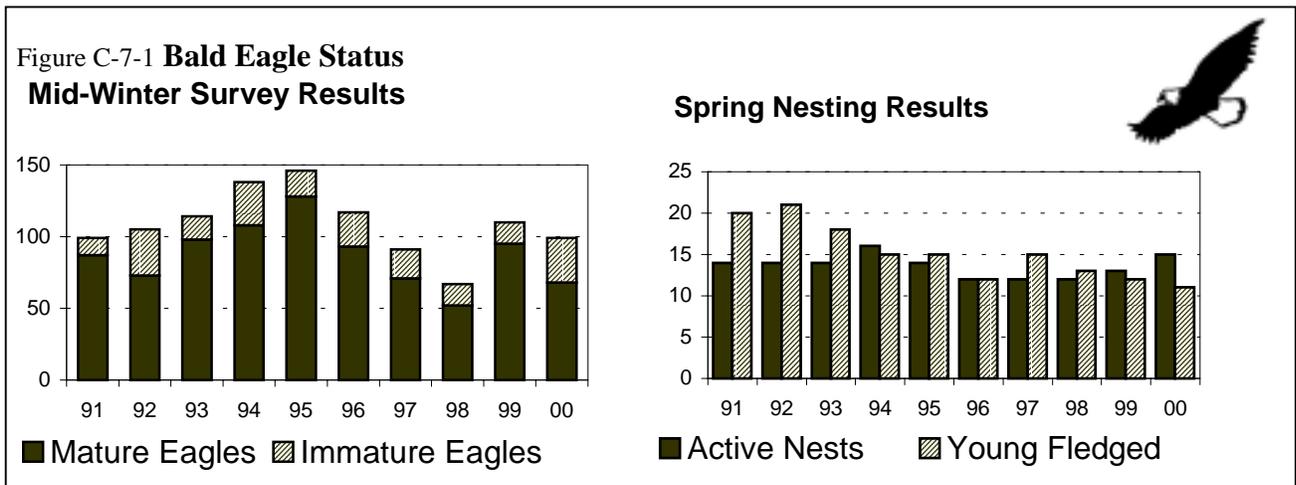
**Habitat:** The components of wolf habitat on the Kootenai did not change significantly in 2000 compared to previous years. Big game habitat treatments and wildfires during the year may result in long term habitat benefits for wolves. Big game populations are rebounding following the severe winter of 1996-97, and this should provide adequate prey resources for continued growth in the wolf population.



**Bald Eagle:** The Montana Bald Eagle Management Plan (MBEWG, 1994) and the Pacific States Bald Eagle Recovery Plan (USFWS, 1986) provide guidance for bald eagle recovery. These plans call for the establishment of 52 nesting pairs within Recovery Zone 7, the Montana section of the Upper Columbia River Basin. This recovery zone includes all public and private land west of the continental divide in Montana. The Kootenai National Forest area is about 15 percent of the zone. Bald eagle habitat is generally within one mile of major lakes and rivers. Habitat quality and quantity on the Kootenai is stable, and may be increasing in the long term as potential nest trees mature.

Figure C-7-1 shows the results of mid-winter bald eagle population surveys. Sightings occur mostly along major watercourses both on the Forest and on adjacent ownerships. Results are highly variable from year to year due to varying weather conditions. The survey results for 2000 are slightly below the long-term (16 year) average since records have been kept. A total of 68 mature and 31 immature bald eagles were observed.

Numbers of active eagle nests and young eagles fledged are also shown in Figure C-7-1. Nesting surveys show the 2000 nesting eagle population continuing at similar levels as the past few years. Eleven young were fledged from 15 active nests. USFWS believes the bald eagle has achieved recovery goals and they have proposed removing them from the threatened species list.



Beginning in FY96, eagle nest results reflect only nests occurring on National Forest lands. Previous years' data reflect nests on other ownerships as well as National Forest.



**Grizzly Bear:** The Kootenai National Forest contains portions of two grizzly bear recovery zones: the Cabinet-Yaak Ecosystem (CYE) and the Northern Continental Divide Ecosystem (NCDE). About 72 percent of the CYE is located on the western portion of the Forest and about 4 percent of the NCDE is located in the extreme northeast corner (see Map C-7-1). Each of these ecosystems is further subdivided into smaller areas for analysis and monitoring, known as bear management units (BMUs).

The Forest's primary efforts in grizzly bear recovery are in habitat management, cooperating in grizzly bear studies in the Yaak River and Cabinet Mountains areas, and working with local citizens and interest groups to achieve understanding and consensus on grizzly bear management issues.

Recovery goals for each recovery zone are based on the Grizzly Bear Recovery Plan (USFWS, 1993). Three main criteria are used to evaluate grizzly bear recovery: 1) the number of unduplicated sightings of females with cubs averaged over a six-year period; 2) the distribution of females with cubs, yearlings, or two-year-olds measured as the number of BMUs occupied over a six-year period; and 3) the level of known human-caused mortality measured as a percentage of the estimated population average for the past three years. Habitat is also an important factor in grizzly bear recovery. The Forest monitors habitat effectiveness in each BMU as an indicator of habitat trend.

**Habitat Effectiveness:** Figure C-7-2, Table C-7-1 and Figure C-7-3 show habitat effectiveness values for each of the BMUs evaluated during fiscal years 1989-00. Effectiveness is based on the percent of habitat available to bears, with a desired level of 70 percent habitat or more. Habitat effectiveness went down in 4 BMUs and up in 11 BMUs in FY00 compared to FY99. The table does not reflect short term changes in habitat effectiveness that occurred due to road openings for fire suppression during 2000. Generally these openings were less than 6 weeks duration and were closed before the beginning of hunting season. Activities on private lands can affect habitat effectiveness within BMUs, and the Forest Service has no authority over these activities or their effects on grizzly bear habitat effectiveness. 14 of the 18 BMUs were at or above the desired 70 percent level (the same as in FY99), and the Forest-wide average for all BMUs was 73 percent, also the same as in FY99, and slightly above the average for the past 10 years.

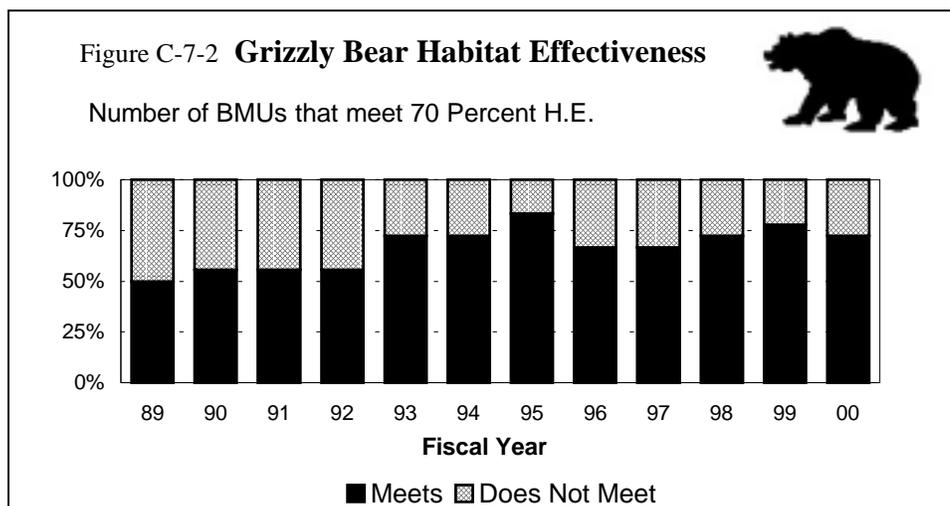


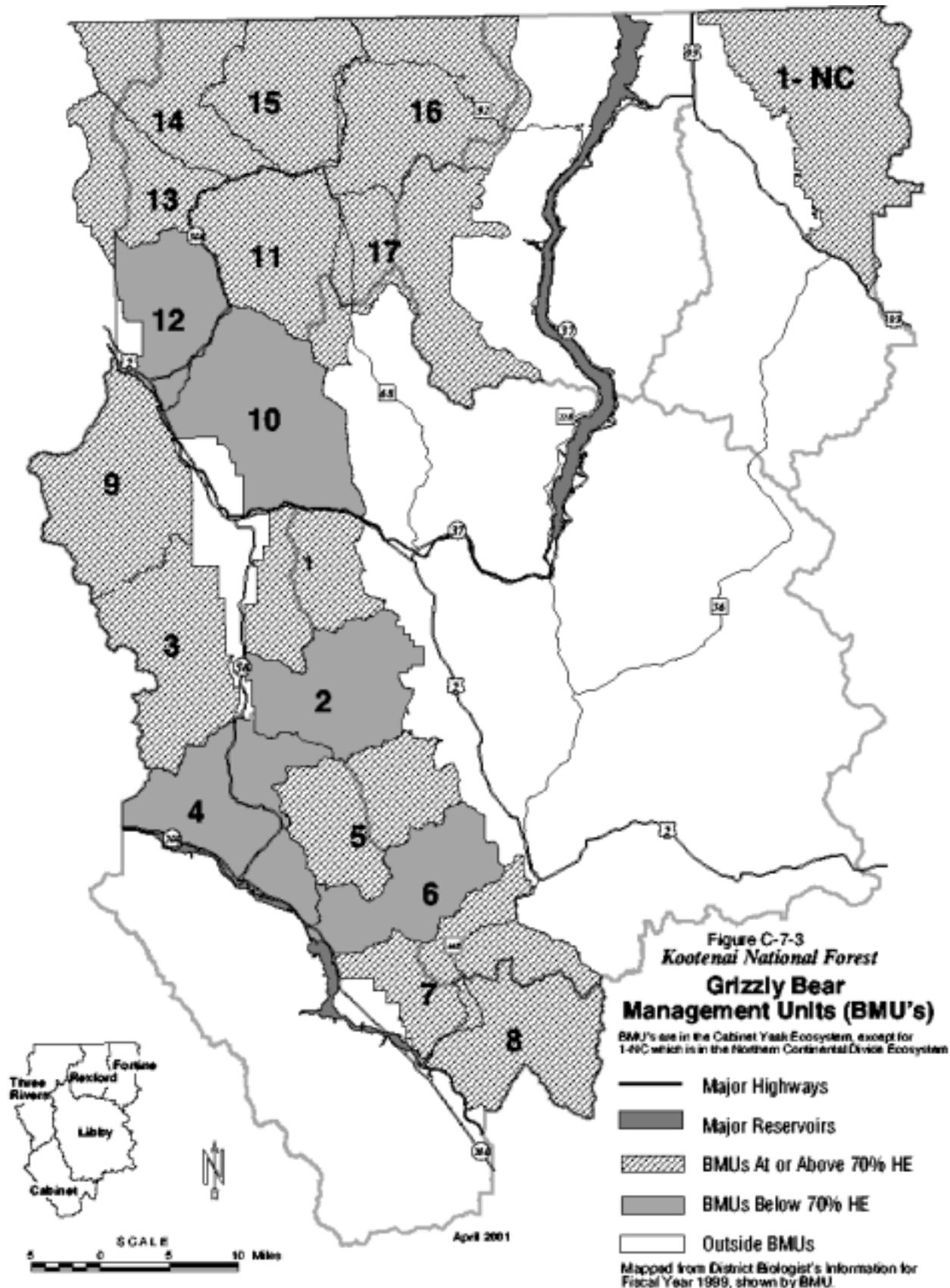
Table C-7-1 **Grizzly Bear Habitat Effectiveness by Fiscal Year**

Grizzly Bear Management Unit (BMU)	R.D	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	FY 00
#NC1 Murphy Lake	3	79%	78%	78%	78%	78%	78%	78%	76%	76%	76%	76%	76%
#1 Cedar	(4) 5	81%	81%	82%	79%	79%	86%	81%	81%	86%	85%	88%	89%
#2 Snowshoe	4 (5) 7	82%	82%	81%	82%	82%	84%	85%	85%	85%	83%	85%	84%
#3 Spar	4	71%	70%	70%	79%	78%	77%	77%	78%	76%	78%	78%	76%
#4 Bull	7	78%	80%	80%	80%	92%	64%	63%	63%	62%	62%	62%	65%
#5 Saint Paul	(5) 7	77%	79%	80%	78%	81%	75%	74%	73%	74%	75%	74%	75%
#6 Wanless	(5) 7	74%	72%	74%	76%	76%	71%	72%	66%	66%	68%	67%	69%
#7 Silver B/Fisher	(5) 7	87%	87%	87%	87%	82%	82%	82%	82%	81%	81%	79%	80%
#8 Vermilion	7	80%	80%	73%	73%	71%	71%	74%	77%	77%	77%	73%	77%
#9 Callahan	4	55%	62%	67%	70%	74%	74%	76%	76%	76%	73%	71%	72%
#10 Pulpit	(4) 5	47%	62%	62%	54%	65%	65%	70%	68%	57%	57%	61%	65%
#11 Roderick	(4) 5	59%	66%	68%	66%	70%	70%	70%	74%	74%	70%	73%	73%
#12 Newton	4	42%	43%	53%	53%	49%	49%	49%	62%	57%	44%	62%	60%
#13 Keno	4	68%	72%	72%	69%	70%	72%	73%	72%	72%	72%	71%	72%
#14 Northwest Pk	4	61%	68%	68%	68%	72%	74%	72%	74%	74%	74%	71%	75%
#15 Garver	4	47%	62%	62%	54%	65%	65%	70%	68%	63%	66%	70%	70%
#16 E Fork Yaak	1 (4)	46%	59%	61%	62%	64%	64%	73%	72%	70%	70%	74%	70%
#17 Big Creek	(1)4 5	58%	58%	63%	64%	68%	70%	68%	68%	68%	71%	71%	73%
<b>Forestwide Average</b>		<b>66%</b>	<b>69%</b>	<b>71%</b>	<b>71%</b>	<b>73%</b>	<b>72%</b>	<b>72%</b>	<b>73%</b>	<b>72%</b>	<b>71%</b>	<b>73%</b>	<b>73%</b>

Shaded entries indicate BMUs that were below 70 percent Habitat Effectiveness standard for that Fiscal Year. BMU #8 Vermilion was re-calculated in FY 1991 and found to have a lower rating, even though nothing changed on the ground. BMUs 11, 13 and 15: boundaries were changed in FY 1991 and found to have a smaller total acreage which resulted in a lower rating.

BMU NC1 Murphy Lake is in the Northern Continental Divide Ecosystem. All other BMUs are in the Cabinet Yaak Ecosystem.

( ) in the Ranger District (R.D.) column indicates the lead District for information reporting.



**Unduplicated Sightings of Females with Cubs:** In FY00, there were two confirmed unduplicated sightings of female grizzly bears with cubs in the Kootenai portion of the CYE (Kasworm 2001a). One of these females produced 2 cubs and lost them both. The other female also produced 2 cubs and lost one. These cub mortalities were assumed to be from natural causes. There were also two confirmed unduplicated sightings of female grizzlies with cubs in the Kootenai portion of the NCDE in FY00. Both ecosystems were above the 6 year average for number of females sighted with cubs.

**Distribution of Females with Young:** 3 of the 17 BMUs on the Kootenai portion of the CYE were occupied by females with young in FY00. The total number of different BMUs occupied over the entire recovery zone during the past 6 years was 13, compared to the Recovery Plan goal of 18 (Kasworm 2001a). The one BMU in the Kootenai's portion of the NCDE was also occupied by a female with young during the year. These numbers are slightly below the 6 year average for the CYE and slightly above the average for the NCDE.

**Mortality:** There were 4 known mortalities in the CYE in FY00, one of which was human-caused (Kasworm 2001b). Three of the mortalities were cubs of the year that died of apparent natural causes. The fourth mortality was a sub-adult female and is currently under investigation. Preliminary population trend analysis that includes the 2000 mortalities indicates that the grizzly bear population trend in the CYE may have turned from slightly increasing to slightly declining as a result of recent mortalities. However, the confidence interval for this estimate makes it impossible to statistically conclude that the population is decreasing. There were no reported grizzly bear mortalities in the Kootenai portion of the NCDE in FY00.

Sightings of females with cubs of the year, distribution of females with young, and human-caused mortalities are summarized for the past six years in Table C-7-2.

Table C-7-2 **Grizzly Bear Females with Cubs, Distribution of Females with Young, and Human-Caused Mortalities**

Fiscal Year	NCDE			CYE		
	# Females with Cubs of the year	#BMUs Occupied by Females with Young	# Human Caused Mortalities	# Females with Cubs of the year	# BMUs Occupied by Females with Young	# Human Caused Mortalities
1995	1	1	1	1	3	0
1996	0	1	0	1	4	0
1997	2	1	*1	3	7	1
1998	2	1	0	0	4	0
1999	0	0	0	0	1	2
2000	2	1	0	2	3	1
Six-year Average	1.2	0.8	0.3	1.2	3.7 **(13)	0.7

\*Outside Recovery Zone

\*\* (13) is the total number of different BMUs occupied over the past 6 years. The recovery Plan goal is 18.

**Access Management:** The Interagency Grizzly Bear Committee manager's subcommittees for the CYE and NCDE are currently working to refine access management guidance for the ecosystems based on the latest scientific information on the effects of human access on local grizzly bear populations. Interim options for analyzing access management parameters were tentatively agreed upon by these groups in December 1998. The monitoring parameters agreed upon included: core area, open motorized route density (OMRD), and total motorized route density (TMRD). As a result of a lawsuit in the CYE, implementation of the CYE Subcommittee's interim direction has been deferred. The current strategy for the CYE is to apply the USFWS's mandatory requirements in the revised Forest Plan Biological Opinion (USFWS 1995) of no net loss in core area and no net increase in OMRD or TMRD in any BMU. Meanwhile, a Forest Plan amendment has been initiated as part of the lawsuit settlement to establish further access management direction in the CYE.

Table C-7-3 below displays OMRD, TMRD and Core by BMU in comparison to previous years for which these parameters have been measured. The data for FYs 98 and 99 has been modified to correct errors discovered in last year's monitoring report.

Table C-7-3 **Baseline conditions of Interim Access Management monitoring items (CYE BMUs)**

BMU	FY98 Core %	FY99 Core %	FY00 Core %	FY98 % BMU OMRD >1mi/ sq.mi.	FY99 % BMU OMRD >1mi/ sq.mi.	FY00 % BMU OMRD >1mi/ sq.mi.	FY98 % BMU TMRD >2mi/ sq.mi.	FY99 % BMU TMRD >2mi/ sq.mi.	FY00 % BMU TMRD >2mi/ sq.mi.
1 Cedar	69	84	83	23	13	12	16	9	11
2 Snowshoe	-	77	78	-	18	17	-	15	14
3 Spar	-	57	58	-	23	24	-	31	30
4 Bull	62*	61*	63	39	39	36	28	27*	26
5 Saint Paul	60	61	62	29	28	27	23	21	21
6 Wanless	51	51*	53	37	32*	34	35	34*	33
7 Silver Butte/Fisher	65	66	66	27	23	23	22	19	20
8 Vermilion	54	57	57	32*	31*	32	23*	21*	21
9 Callahan	-	53*	56		36	32		31	28
10 Pulpit	42	45	48	50	50	45	41	37	34
11 Roderick	52	52	55	32	33*	29	31	31	27
12 Newton	-	56	56	-	43	45	-	28	31
13 Keno	58	56	59	34	37	34	23	26	24
14 Northwest Peak	58	60	56	31	32	28	24	22	26
15 Garver	35	46	48	32	30	31	45	34	32
16 E Fk Yaak	38	40	45	38	36*	31	45	33*	38
17 Big Creek	32	42*	49	43	37	32	44	33	27
Average	52	57	58	34	29	28	31	27	26

\* Corrects errors in past reports.

The above table does not reflect short term changes in habitat parameters due to road openings for fire suppression during 2000. Generally these openings were less than 6 weeks duration and were

closed before the beginning of hunting season. Table C-7-4 shows the effects of these temporary road openings in BMUs where emergency fire suppression activities occurred.

Table C-7-4 **Effects of temporary road openings for emergency fire suppression during FY00**

BMU	Core %	OMRD >1mi/sq.mi.	TMRD >2mi/sq.mi.
1 Cedar	82	13	12
4 Bull	63	37	26
6 Wanless	53	35	34
8 Vermilion	57	32	22
9 Callahan	55	35	29
10 Pulpit	44	52	40
11 Roderick	53	38	29
13 Keno	58	36	25
14 Northwest Peak	53	35	28
15 Garver	48	42	33
16 E Fk Yaak	42	45	41
17 Big Creek	43	42	33

**Summary:** Overall, grizzly bear habitat effectiveness remained about the same as in FY99, and is above the desired level of 70 percent Forest-wide. Seventy-eight percent of BMUs meet the desired 70 percent habitat effectiveness level, and the average habitat effectiveness level Forest-wide is 73 percent. Emergency fire suppression activities temporarily increased road densities and reduced core in some BMUs. Emergency consultation with USFWS was conducted on these activities. All road openings were returned to their prior condition before the start of hunting season.

Sightings of female grizzly bears with cubs was up in FY00, and the six year average was up as well. More BMUs were occupied by females with young than in the previous year. There was one human caused mortality of a sub-adult female bear and three cub mortalities from natural causes in the CYE during the year. Overall, open and total road densities declined slightly during the year, although road openings for emergency fire suppression temporarily increased road densities in some BMUs. The amount of core area in grizzly habitat slightly increased during the year. Preliminary population trend analysis including the 2000 mortalities indicates that the grizzly bear population in the CYE may be slightly declining, although small sample sizes and wide confidence intervals prohibit statistical confirmation of trend (Kasworm 2001b).



**White Sturgeon** -- The USFWS Recovery Plan for the Kootenai River white sturgeon was signed 30 September, 1999. The short-term goals of the Plan are to reestablish natural reproduction and prevent extinction of the species. Long term goals include providing suitable habitat conditions and restoring a natural age-class structure and an effective population size. This stock of fish will be considered for downlisting to threatened status after 10 years only if natural reproduction occurs in three different years; the estimated population is stable or increasing; enough captive-reared juveniles are added to the population for 10 consecutive years that 24 to 120 juveniles survive to maturity; and a long-term Kootenai River Flow strategy is implemented that ensures natural reproduction. Delisting of this population is estimated to take at least 25 years following the approval of the Plan.

The Recovery Plan for the white sturgeon outlines a comprehensive set of actions needed to begin the recovery process. The Plan does not identify actions or objectives that directly affect management of the Kootenai National Forest. However, under the Endangered Species Act (Section 7(a)(1)), the Forest is obligated to use its authorities to aid in the recovery process and to consult with the USFWS on all proposed or authorized activities. All proposed projects and activities evaluated by the Forest in FY00 were found to have No Effect on the species.

The last population estimate from the Idaho Department of Fish and Game indicates there are approximately 1,470 adult sturgeon in the population.

**Bull trout** -- The Kootenai National Forest continues to consult with the USFWS on specific ongoing activities under Section 7(a)(1) of the Endangered Species Act. During FY00 the Forest consulted on all proposed activities. The Forest has worked closely with the five other western Montana National Forests, Bureau of Land Management and the USFWS to implement Programmatic Biological Assessments for stream surveys, road maintenance, timber stand improvement, trail maintenance, and recreational site maintenance. The Forest also prepared watershed baselines for the four sub-populations supported on Kootenai National Forest lands for submission to the USFWS.

There were two new projects that were evaluated by the Forest that May Affect but are Not Likely to Adversely Affect bull trout. Consultation for the Sterling Rock Creek Mine Proposal was ongoing through FY00. There were three recreational suction dredge projects determined to adversely affect bull trout that were consulted on through a batched BA. The remainder of new projects evaluated were determined to have No Effect on the species. The USFWS continues to develop a recovery plan with input from the Forest as requested. The Forest continues to work closely with Montana Fish Wildlife and Parks and the USFWS to determine distribution and abundance of bull trout within the boundaries of the Kootenai National Forest. White Pine Creek was added to the list of bull trout habitat with the discovery of a single sub-adult in FY00.

**Recommended Actions:** Based upon the best available information, populations of all threatened or endangered species on the Kootenai are stable or increasing. The peregrine falcon has recovered and has been removed from the endangered species list. The bald eagle is likewise proposed for removal from the list. All of the threatened and endangered species' habitats being monitored appear to be maintaining or improving. The information shows that the Kootenai National Forest is progressing toward providing adequate habitat for threatened and endangered species recovery. Based on review of this item, specific changes to Forest Plan direction are not needed at this time.

As with the terrestrial species, the two ESA-listed species of fish on the Forest appear to be increasing in number. Ongoing population research on the white sturgeon determined that there was successful spawning in 1997 as well as establishing a higher estimate of individuals in the population. Furthermore, a recovery plan is now in place with specific goals and recovery actions. Bull trout redd count numbers were commensurate with numbers collected in FY99. Redd count numbers provided by Montana Fish Wildlife and Parks continue to show stable or increasing numbers of bull trout across the Forest. This information indicates the Forest Plan as amended by INFS is providing adequate protection to the aquatic threatened and endangered species and habitat found on the Forest. This is consistent with findings in the recent Supplemental Draft Environmental Impact Statement issued for the ICBEMP.

**Literature Cited:**

Kasworm, W. 2000a. 1999 grizzly bear recovery plan criteria. Unpublished report. US Fish and Wildlife Service, Libby, MT. 2 p.

Kasworm, W. 2000b. Preliminary grizzly bear population trend estimates in the Cabinet-Yaak recovery zone, 1983-2000. Unpublished report. US Fish and Wildlife Service, Libby, MT. 3 p.

MBEWG. 1994. Montana bald eagle management plan. Montana Bald Eagle Working Group. Bureau of Reclamation, Billings, MT. 104 pp.

USFWS. 1980. Northern Rocky Mountain wolf recovery plan. U.S. Fish and Wildlife service, Denver, CO. 67 pp.

USFWS. 1986. Recovery plan for the Pacific bald eagle. U.S. Fish and Wildlife Service, Portland, OR. 160 pp.

USFWS. 1993. Grizzly bear recovery plan. U.S. Fish and Wildlife Service, Missoula, MT. 181 pp.

USFWS 1995. Amended biological opinion on the Kootenai Forest Plan. U.S. Fish and Wildlife Service, Helena, MT. 15 pp.

**RANGE: Range Use; Monitoring Item D-1**

**ACTION OR EFFECT TO BE MEASURED:** Determine if the grazing use measured in Animal Unit Months (AUMs) meets Forest Plan Projections.

**VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:** +/- 20 percent of anticipated AUMs.

**Purpose:** This monitoring item was established to track grazing use on the Forest. The Forest Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both high.

**Background:** Livestock use on the Kootenai was anticipated to be about 12,600 AUMs per year. At the time the Plan was approved, there were 41 active allotments located mostly in the northeastern portion of the Forest on the Rexford and Fortine Ranger Districts. Currently, the Forest has 44 grazing allotments, of which 22 are active. The allotments have a ten-year permit period. All of the allotments but two have had NEPA analysis completed and Management Plans written and updated since 1996. The two remaining allotments are scheduled to be updated in Fiscal Year 2001. The Swamp Creek allotment no longer exists because it was part of a land exchange.

**Results:** In FY00 there were 9032 AUMs of grazing use on the Kootenai National Forest (see Table D-1-1). This is 72 percent of the projected level of available use. Monitoring indicates that riparian protection measures identified in the new grazing permits are being implemented.

Table D-1-1 **Range Use in AUMs**

<b>Item</b>	<b>Forest Plan Projected Use</b>	<b>FY 00 Use</b>	<b>13-Year Average</b>
AUMs	12,600	9032	10,704
Percent	100%	72%	85%

**Evaluation:** During the last thirteen years, grazing use has averaged 85 percent of projected use, which is within the range anticipated in the Plan. Use is lower than projected in the Forest Plan due to Permittee requests for non-use and Forest requests to defer grazing to prevent overgrazing in riparian areas and to prevent stream bank deterioration. All the allotments on the Kootenai National Forest consist of transitory range. Generally, there is plenty of forage within the allotments. The biggest problem is that the cattle congregate in openings and in riparian areas, which in effect become “sacrifice” areas. Also, these openings usually “convert” to Kentucky bluegrass sites, which continually attract the animals. On transitory range it is very difficult to move and/or to keep animals spread over the entire allotment. Partial or total non-use was taken on nine allotments. Six temporary permits were issued.

**Recommended Action:** In review of this monitoring item, no changes are needed to the Forest Plan at this time. During Forest Plan Revision, the status of all allotments will be reviewed. This item will continue to be monitored.

## RANGE: Noxious Weed Infestations; Monitoring Item D-2

**ACTION OR EFFECT TO BE MEASURED:** Determine acreage infested with noxious weeds.

**VARIABILITY, WHICH WOULD INITIATE FURTHER EVALUATION** 10% increase in number of acres infested,  
10% increase in density of existing infestations or a change in the diversity of noxious weed species



**Purpose:** This monitoring item was established to identify the changes in noxious weed infestations on the Forest. The Forest Plan requires that this item be reported annually. The expected accuracy and reliability of the information are in the moderate to high range.

**Background:** The Forest Plan states 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. Weed infestations have been established along many roadsides, railroad and powerline rights-of-way and other disturbed areas such as gravel pits. Spotted knapweed and others have started to migrate away from the road right-of-way onto undisturbed hillsides, especially within the drier vegetation types. Most of the weeds are brought here attached to machinery, automobiles, railcars, etc. The Kootenai Forest classifies weeds into four categories that includes all the species listed by the State of Montana and Lincoln County. Several species have been added to the list including those that the State of Montana added to the list. Table D-2-1 shows the types of weeds, and the category they are in, that occur on the Forest. The Forest has prepared an Herbicide Weed Control Environmental Assessment (EA) (1997). Nomenclature for vascular plants follows Hitchcock and Cronquist (1973) and for bioagents follows Rees et al. (1996).

Table D-2-1 Noxious Weeds on the Kootenai National Forest

Category	Status	Threat	Goal	Species Included
<b>Group Ia.</b> Potential Invaders	not known to exist	high probability of causing severe economic or environmental damage	prevention, eradication	yellow starthistle ( <i>Centaurea solstitialis</i> ), common crupina ( <i>Crupina vulgaris</i> ), Dyer's woad ( <i>Isatis tinctoria</i> ), purple loosestrife ( <i>Lythrum salicaria</i> ), eurasian milfoil ( <i>Myriophyllum spicatum</i> ),
<b>Group Ib.</b> New Invaders	small populations at limited sites	high probability of causing severe economic or environmental damage	eradication	whitetop ( <i>Cardaria draba</i> ), musk thistle ( <i>Carduus nutans</i> ), Russian knapweed ( <i>Centaurea repens</i> ), rush skeletonweed ( <i>Chondrilla juncea</i> ), blueweed ( <i>Echium vulgare</i> ), leafy spurge ( <i>Euphorbia esula</i> ), Japanese knotweed ( <i>Polygonum cuspidatum</i> ), tansy ragwort ( <i>Senecio jacobaea</i> )
<b>Group II.</b> Existing populations	large, widespread populations	high probability of causing environmental or economic damage	containment within already infested areas, reduction of plant populations	diffuse knapweed ( <i>Centaurea diffusa</i> ), spotted knapweed ( <i>Centaurea maculosa</i> ), oxeye daisy ( <i>Chrysanthemum leucanthemum</i> ), Canada thistle ( <i>Cirsium arvense</i> ), orange hawkweed ( <i>Hieracium aurantiacum</i> ), meadow hawkweed ( <i>Hieracium pratense</i> ), St. John's-wort ( <i>Hypericum perforatum</i> ), dalmatian toadflax ( <i>Linaria dalmatica</i> ), yellow toadflax ( <i>Linaria vulgaris</i> ), sulfur cinquefoil ( <i>Potentilla recta</i> ),
<b>Group IIb.</b> Existing infestations (watch)	variable, some new, some well established	Unknown but high probability of causing environmental and economic damage	containment within already existing areas, reduction of plant populations, monitor	absinth wormwood ( <i>Artemisia absinthium</i> ), meadow knapweed ( <i>Centaurea pratensis</i> ), bull thistle ( <i>Cirsium vulgare</i> ), poison hemlock ( <i>Conium maculatum</i> ), field bindweed ( <i>Convolvulus arvensis</i> ), hound's tongue ( <i>Cynoglossum officinale</i> ), Scot's broom ( <i>Cytisus scoparius</i> ), spotted cat's-ear ( <i>Hypochaeris radicata</i> ), kochia ( <i>Kochia scoparia</i> ), common tansy ( <i>Tanacetum vulgare</i> )

Table D-2-1a Noxious Weeds on the Kootenai National Forest

Category	Status	Threat	Goal	Species Included
<b>Group Ia.</b> <i>Potential Invaders</i>	not known to exist	high probability of causing severe economic or environmental damage	prevention, eradication	plumeless thistle ( <i>Carduus acanthoides</i> ), yellow starthistle ( <i>Centaurea solstitialis</i> ), common crupina ( <i>Crupina vulgaris</i> ), Dyer's woad ( <i>Isatis tinctoria</i> ), purple loosestrife ( <i>Lythrum salicaria</i> ), Eurasian milfoil ( <i>Myriophyllum spicatum</i> ), tamarisk ( <i>Tamarix</i> spp.)
<b>Group Ib.</b> <i>New Invaders</i>	small populations at limited sites	high probability of causing severe economic or environmental damage	eradication	bugloss ( <i>Anchusa officinalis</i> ), whitetop ( <i>Cardaria draba</i> ), musk thistle ( <i>Carduus nutans</i> ), diffuse knapweed ( <i>Centaurea diffusa</i> ), Russian knapweed ( <i>Centaurea repens</i> ), dwarf snapdragon ( <i>Chaenorrhium minus</i> ), rush skeletonweed ( <i>Chondrilla juncea</i> ), Scotch thistle ( <i>Onopordum acanthium</i> ), Japanese knotweed ( <i>Polygonum cuspidatum</i> ), tall buttercup ( <i>Ranunculus actris</i> )
<b>Group Ic.</b> <i>New Invaders</i>	Medium populations at limited sites	high probability of causing severe economic or environmental damage	containment within main body of infestation, eradication of populations	blueweed ( <i>Echium vulgare</i> ), leafy spurge ( <i>Euphorbia esula</i> ), dalmatian toadflax ( <i>Linaria dalmatica</i> ), yellow toadflax ( <i>Linaria vulgaris</i> ), tansy ragwort ( <i>Senecio jacobaea</i> )
<b>Group II.</b> <i>Existing Populations</i>	large, widespread populations	high probability of causing environmental or economic damage	Prioritize areas to be treated, reduction of plant populations, reduce rate of spread	common burdock ( <i>Arctium minus</i> ), absinth wormwood ( <i>Artemisia absinthium</i> ), spotted knapweed ( <i>Centaurea maculosa</i> ), oxeye daisy ( <i>Chrysanthemum leucanthemum</i> ), Canada thistle ( <i>Cirsium arvense</i> ), field bindweed ( <i>Convolvulus arvensis</i> ), common hound's tongue ( <i>Cynoglossum officinale</i> ), orange hawkweed ( <i>Hieracium aurantiacum</i> ), meadow hawkweed ( <i>Hieracium pratense</i> ), common St. John's-wort ( <i>Hypericum perforatum</i> ), sulfur cinquefoil ( <i>Potentilla recta</i> ), common tansy ( <i>Tanacetum vulgare</i> )
<b>Group III.</b> <i>Species of Undetermined Status</i>	variable, some new, some well established	Undetermined – potential for environmental and economic damage	Monitor known populations for trends	meadow knapweed ( <i>Centaurea pratensis</i> ), chicory ( <i>Chicorium pratensis</i> ), poison-hemlock ( <i>Conium maculatum</i> ), Scot's broom ( <i>Cytisus scoparius</i> ), spotted cat's-ear ( <i>Hypochaeris radicata</i> ), kochia ( <i>Kochia scoparia</i> ), scentless chamomile ( <i>Matricaria maritime</i> var. <i>agrestis</i> ), germander speedwell ( <i>Veronica chamaedrys</i> ), common speedwell ( <i>Veronica officinalis</i> )

**Evaluation:** All the weed species listed in Table D-2-1 are of concern on the Kootenai National Forest. This list includes the State of Montana and Lincoln County lists as well as other weed species that the Forest has deemed important. The table (D-2-1a) indicates recommended changes that better reflect the current status of weeds on the KNF. Also, several species have been added to the list, including the two that have been added to the State of Montana list—tall buttercup and tamarisk. The State of Montana and Lincoln County are very concerned about new invaders, especially two relatively new weed invaders--tansy ragwort and rush skeletonweed. There is a strong desire to keep these two species from moving east of the Continental Divide into the large farming areas of eastern Montana. The State has provided added monies for surveys and spraying to contain the expansion of these species and to eradicate them. Even though strong emphasis is placed on these two species,

concern remains for all the weed species listed. Also, control is not confined to these two species. Treatments for the weed species include one, or a combination, of the following: **biological**--release of bioagents; **mechanical**--hand pulling, hoeing, clipping of seed heads; **chemical**--application of herbicides; and **cultural**--establishment of desirable plants as competition.

Existing weed infestations have expanded greatly over the past 15 years. The most common weed on the KNF is spotted knapweed. In 1995, county weed specialists estimated that knapweed infested over 200,000 acres across the forest (Hirsch and Leitch 1996). Two-thirds of the total infestations are in rangelands, wildlands, or forest lands; the remaining third was in road or railway corridors. The most widespread infestations are in the Clark Fork, Fisher River, and Kootenai River valleys. The spread of weeds has become very noticeable on winter game ranges, especially to the east of Libby. As an example, the "horse range" behind (north of) Canoe Gulch Ranger Station is estimated to have lost 70-80 percent of its effectiveness as winter range. Most of the encroachment has been by spotted knapweed. Spotted knapweed is less widespread in the Tobacco Valley area because of earlier weed control programs that included the use of herbicides (1986 Noxious Weed Treatment Program Final Environmental Impact Statement allows the use of herbicides on the Rexford and Fortine Ranger Districts). KNF specialists estimate that approximately 250,000 acres are at moderate or high risk of infestation by spotted knapweed.

Orange and meadow hawkweeds, oxeye daisy and common St. John's wort have made significant increases in the last ten years around the Forest. The toadflaxes, absinth wormwood, and common hound's-tongue are increasing in different parts of the Forest.

### **Inventory**

Three hundred ninety two weed surveys were completed last summer (FY00). Table D-2-2 summarizes the percent of a weed species found within each survey. The surveys note each noxious weed species seen in the survey (from the Kootenai National Forest list of weed species) as well as the predominant infestation size and cover class, or density, of each species. Weeds listed on table D-2-1 are those currently being tracked by the Kootenai National Forest. Three types of surveys were conducted last summer. One was a road survey specifically looking for rush skeletonweed. It also noted the presence or absence of other weed species. The second survey type was an area survey confined to the upper Little Wolf Creek drainage specifically to locate tansy ragwort plants. The third type was a general survey noting weed species on roads traveled. The majority of the surveys occurred on the northeast portion of the Forest. People involved with fighting fire on other parts of the Forest prevented a more even distribution of survey location

Table D-2-2

Species ( <i>Six Letter Code</i> )	% of Surveys with this Species	Predominant Infestation Size	Predominant Cover Class
<b><i>Ia Potential Invaders</i></b>			
Plumeless thistle ( <i>Caraca</i> )			
Yellow starthistle ( <i>Censol</i> )			
Common crupina ( <i>Cruvul</i> )			
Dyers woad ( <i>Isatin</i> )			
Purple loosestrife ( <i>Lytsal</i> )			
Eurasian milfoil ( <i>Myrspi</i> )			
Tamarisk ( <i>Tamarix spp.</i> )			
<b><i>Ib New Invaders (small populations)</i></b>			
Bugloss (Ancoff)	*		
Whitetop ( <i>Cardra</i> )	*		
Musk thistle ( <i>Carnut</i> )	*		
Diffuse knapweed ( <i>Cendif</i> )	*		
Russian knapweed ( <i>Cenrep</i> )	*		
Dwarf snapdragon ( <i>Chamin</i> )	*		
Rush skeletonweed ( <i>Chojun</i> )	5.5	.1-1 acre	trace
Scotch thistle ( <i>Onoaca</i> )	*		
Japanese knotweed ( <i>Polcus</i> )	*		
Tall buttercup ( <i>Ranacr</i> )	*		
<b><i>Ib New Invaders (medium populations)</i></b>			
Blue weed (Viper's bugloss) ( <i>Echvul</i> )	1	>5 acre	medium
Leafy spurge ( <i>Eupesu</i> )	*		
Dalmatian toadflax ( <i>Lindal</i> )	1	<.1 acre	trace
Yellow toadflax ( <i>Linvul</i> )	<1	<.1 acre	trace
Tansy ragwort ( <i>Senjac</i> )	9	<.1 acre	trace
<b><i>II Existing Infestations</i></b>			
Common burdock ( <i>Arcmin</i> )	*		
Absinth wormwood ( <i>Artabs</i> )	8	***	***
Spotted knapweed ( <i>Cenmac</i> )	35	***	***
Oxeye daisy ( <i>Chrlou</i> )	50	***	medium
Canada thistle ( <i>Cirarv</i> )	46	**	**
Field bindweed ( <i>Conarv</i> )	*		
Common hound's-tongue ( <i>Cynoff</i> )	6	**	**
Orange hawkweed ( <i>Hieaur</i> )	33	***	***
Meadow hawkweed ( <i>Hiepra</i> )	30	<.1 acre	medium to high
Common St. John's-wort ( <i>Hypper</i> )	6.5	***	***
Sulfur cinquefoil ( <i>Potrec</i> )	21	<.1 acre	trace to low
Common tansy ( <i>Tanvul</i> )	1	<.1 acre	trace to low
<b><i>Iib. Species of Undetermined Status</i></b>			
Meadow knapweed ( <i>Cenpra</i> )	8	<.1 to 1-5 acre	trace to low
Chicory ( <i>Cicint</i> )	*		
Poison-hemlock ( <i>Conmac</i> )	*		
Scot's broom ( <i>Cytsco</i> )	*		
Spotted cat's-ear ( <i>Hyprad</i> )	<1	<.1 acre	trace
Kochia ( <i>Kocscs</i> )	*		
Scentless chamomile ( <i>Matmar</i> )	27	<.1 acre	trace
Germander speedwell ( <i>Vercha</i> )	*		
Common speedwell ( <i>Veroff</i> )	*		

\* Species known to occur on the KNF or Lincoln County but not noted on any surveys.

\*\* = indicates that the lower three categories of size and cover class are well represented.

\*\*\* = indicates that all infestation size and cover class categories are well represented.

Table **D-2-2** information was tabulated from the three types of surveys. These surveys also indicated the typical size of infestation and the average cover class or density of plants. These surveys were conducted along both open and closed roads. Infestation sizes were noted and characterized as one of the following: <.1 acre, .1 to 1 acre, 1 to 5 acres, and > 5 acres. Cover classes (plant densities) were characterized as either trace (<1%), low (1 to 5%), medium (6 to 25%), or high (>25%). The total number of noxious weed species noted in the road surveys is 16. There are an additional 26 species on the Forest weed list. Eleven new sites of rush skeletonweed were located. Over 600 miles of road were inventoried.

Approximately 4500 acres were surveyed and mapped for tansy ragwort. Both the size and density were noted and provided the basis for the spraying of tansy. The tansy ragwort population was originally noted only in the upper Little Wolf area on the KNF and the upper Good Creek area of the Flathead National Forest. It was hoped that it could be contained to these areas. It is now being found up to 20 air miles away. Several new sites were found again last season.

Change over time can be measured by observing changes in % of surveys with each species present, and by observing changes in the most common size and density of those populations. Table D-2-2 also shows that spotted knapweed, common St. John's-wort, meadow hawkweed, Canada thistle, orange hawkweed, absinth wormwood, common hound's-tongue, and oxeye daisy are the most common weed species present on the KNF, all having been recorded on over 30% of the surveys conducted. Canada thistle, spotted knapweed, and bull thistle are the most prevalent. Many weed species are just becoming established, such as rush skeletonweed, blue weed, chicory, kochia, Dalmatian and yellow toadflaxes, common and germander speedwells, scentless chamomile, and tall buttercup. Common St. John's-wort, orange hawkweed, rush skeletonweed, common tansy, and oxeye daisy all appear to be more common on the west side of the Forest, whereas, absinth wormwood, meadow hawkweed, hound's-tongue, musk thistle, and tansy ragwort are more common on the east side. Musk thistle, whitetop, Japanese knotweed, diffuse and meadow and Russian knapweed, Scotch thistle, kochia, leafy spurge, poison-hemlock, and Scot's broom have been found on the Forest, but were not recorded in this year's surveys.

**Table D-2-3 % of Weed Populations in Each Infestation Size and Density by Weed Category**

Weed Category	Infestation Size				Infestation Density			
	% <.1 acre	% .1-1 acre	% 1-5 acres	% >5 acres	% Trace	% Low	% Medium	% High
Potential Invaders	0	0	0	0	0	0	0	0
New Invaders	55	34	5	6	94	1	5	0
Existing Infestations	38	35	21	5	26	33	31	10
Watch Species	42	36	16	6	41	29	22	8
Overall Average	41	36	18	6	33	29	25	8

Table D-2-3 describes the average infestation size and density for each of the weed categories (New Invader, Existing Infestation, etc.) and then gives the overall average for all weeds tracked by the

Forest. This table shows that the majority of weed populations noted (77%) are found in populations of less than .1 acre and .1-1 acre in size. Population densities for trace (33%), low (29%), and medium (25%) are all similar. However, weeds in the existing infestation category are more evenly spread throughout the size and density categories, showing that they have not remained in the smaller size classes and densities, but rather trend toward larger populations and higher densities if left unchecked.

This table was calculated by dividing the total number of recorded weed infestations in each category (size class and density class) by the total number of recorded weed infestations in that weed category. This gives a percentage of the total weeds in each category found in each size and density classes. The same was done to calculate the overall average, adding up weed infestations in all categories by their infestation sizes and densities, and dividing by the total weed infestations recorded. This table will also be valuable for displaying the changes in weed populations over time.

## CONTROLS

### *Biological Agents*

#### Implementation

The KNF's present weed management program is an Integrated Pest Management (IPM) approach that combines prevention, education, and biological, mechanical, cultural, and chemical control of weeds. Biological control (biocontrol) has been a primary method of weed control across much of the forest. Since 1987, the KNF, in cooperation with the Western Agricultural Research Center (WARC), has made approximately 100 releases (Table D-2-4) of biocontrol agents. Most of these releases have been targeted at control of spotted knapweed, though several biocontrol agents for common St. John's-wort, tansy ragwort, leafy spurge, Canada thistle, and Dalmatian toadflax have also been released. The releases have been made in approximately 75 different locations. Some releases have been made in the same sites to help build the populations faster in these areas.

The banded gallfly (*Urophora affinis*) was released in Montana and Oregon in 1973. This bioagent attacks the seed heads of spotted knapweed. It has survived and become established to the point where it can be found throughout much of the Forest. About 6700 insects were released at 15 different sites on the KNF last summer. There were a total of seven bioagents. Five (sulphur knapweed root moth, knapweed root weevil, lesser knapweed flower weevil, knapweed seed head moth, and gall fly) of the agents were host specific for the knapweeds, especially spotted and diffuse. The other bioagents, ragwort seed fly and the cinnabar moth, were released on the tansy ragwort infestation area.

The effect of these releases has been minimal thus far, although the bioagent populations have been building and the increase in weeds has slowed in some areas. Biocontrol has not measurably reduced populations of knapweed, St. John's-wort, Canada thistle, or toadflax on the KNF, probably because populations of the biocontrol agents are still very small relative to the size of the weed infestations. There is observational evidence that seedhead flies have slowed the rate of knapweed spread and, with continued releases and reproduction, these and other biocontrol insects may, over time, begin to reduce existing weed populations. However, it is unlikely that biocontrol agents will cause any widespread reduction of spotted knapweed for at least 10 years, during which time spotted knapweed, St. John's-wort, toadflax, and other existing infestations will continue spreading (Herbicide Weed Control EA 1997).

Biocontrols have advantages and disadvantages. If biocontrols become established, they will increase in number and continue to attack the target organism. These controls are generally species or species group specific. Other vegetation and resources are not harmed. However, many years are required for biocontrol populations to become large enough to impact the host weed. Biocontrols may also be preyed upon by other insects and animals. Some biocontrols may be limited by climatic and environmental conditions (rainfall, cold, shade etc.). Biocontrols usually do not eradicate the host weed completely and are often required in very large numbers to significantly affect the host. Biological control agents do not effectively control new infestations because populations are generally small and scattered or because effective biocontrol agents have not been found (Herbicide Weed Control EA 1997). Biological controls are best used to decrease the density or vigor of established noxious weed infestations, but are generally not effective at stopping the spread of new invaders.

**Effectiveness:**

Various spot checks have shown that larvae of the released bioagents can readily be found. Last summer the Northern Region office of Cooperative Forestry and Forest Health Protection (CFFHP) monitored the survival of *Agapeta zoegana* and *Cyphocleonus achates* releases. Of the 15 bioagent release sites checked all had larvae and/or adults of the bioagents present. A determination was made that at least four of the sites have populations sufficient to use as insectaries (a population large enough to collect insects for transfer to other sites). A local insectary is the best since these insects have adapted the best to conditions of the local area.

**HERBICIDE APPLICATION**

**Implementation:**

In 1999 a total of 1427 acres were treated with herbicides to control rush skeletonweed, spotted knapweed, canada thistle, Dalmatian and yellow toadflax, leafy spurge, absinth wormwood, and tansy ragwort specifically. These applications also reduced populations of diffuse knapweed, sulfur cinquefoil, oxeye daisy, St. John's wort, orange hawkweed, and meadow hawkweed. In the last eight years 6367 acres have been sprayed for spotted knapweed, leafy spurge, dalmation and yellow toadflax, rush skeletonweed, tansy ragwort, Russian knapweed, and diffuse knapweed.

**Effectiveness:**

No specific plots were established to monitor the effectiveness of herbicide applications, although monitoring of the rush skeletonweed populations by the county has shown that Tordon 22K is effective against this species. Follow-up spraying of individual plants that were not sprayed because they were missed earlier, or germinated later in the year has been found to be a key element in the control of this species. Monitoring effectiveness of herbicide applications is in the form of photo points within treated areas before and after treatments and will continue for 10 years after treatment.

The KNF has used herbicides to control noxious weeds with success. The 1986 Noxious Weed Treatment Program Final Environmental Impact Statement allowed the use of herbicides on the Rexford and Fortine Ranger Districts. Spraying of roadsides, administrative sites, and gravel pits on these districts has visibly reduced weed populations in many areas and prevented weeds from spreading to uninfested areas. Except for emergency spraying at the Troy and Libby Airports after

the 1994 fires and for rush skeletonweed spraying starting in 1993, the KNF has only been spraying on a larger scale since 1997. Lincoln, Sanders, and Flathead Counties have sprayed roadsides that cross NFS lands where the county has clear rights-of-way since the early 1990's. The KNF completed an Herbicide Weed Control Environmental Assessment (EA 1997). The purpose of this EA was to provide an additional tool for eradicating new invaders and limiting the spread of existing noxious weeds.

## **MECHANICAL AND CULTURAL**

### **Implementation:**

Seed heads of tansy ragwort were clipped along several hundred yards of roadway. Areas of dalmation toadflax were hand pulled. These plants and plant parts were then burned.

### **Effectiveness:**

The KNF's mechanical and cultural control efforts have not proven effective at containing or reducing widespread noxious weed infestations. Some forms of mechanical and cultural control, such as tilling and mulching, have not been tried because they are not practical on the steep, forested hillsides that comprise much of the Forest. Roadside mowing has not prevented knapweed from flowering and going to seed. Roadside clipping of tansy ragwort seed heads was used this year in conjunction with spraying.

Hand-pulling, which is the principal method of mechanical control used on the KNF, has been effective on individual plants of some species or very small, isolated weed populations. Attempts to hand-pull large infestations of knapweed and toadflax have provided only temporary control because seeds remain viable in the soil for up to 12 years. Hand-pulling is completely ineffective on weeds with deep taproots and weeds that reproduce through runners or shoots, such as rush skeletonweed and leafy spurge. Pulling these species stimulates growth in the roots and fragments, which remain in the soil, resulting in more plants instead of less (Herbicide Weed Control EA 1997).

Most soil-disturbing activities on the KNF require reseeding of exposed soil. Though reseeding is done principally to prevent erosion, it does inhibit invasion of disturbed sites by noxious weeds. The KNF requires seed to be certified "noxious weed free". In addition, the KNF has established a native seed bank to assist in restoring disturbed sites. Reseeding and revegetating have prevented weeds from spreading onto many disturbed sites. However, these practices have not prevented existing infestations from spreading into wildlands and forests and also have not reduced existing infestations. In 1996 a clause, Noxious Weed Control Provision C(T) 6.26, was added to timber sale contracts. This is a mandatory provision that applies to all new sales and will be included when sales are modified or extended. The clause requires off-road equipment such as tractors, skidders, and processors to be washed prior to operating. This clause will help prevent bringing in new weeds to disturbed sites.

**Conclusion:** Monitoring indicates that several noxious weeds (see Table D-2-2) have increased more than 10% in the numbers of acres affected and some have had a 10% or more increase in density of existing infestation, since the Forest Plan (1987) was first signed. In addition, with the discovery of several new invaders over the last several years, it is apparent that the diversity of

noxious weed species has increased. Based on this, this monitoring item is outside the range prescribed in the Forest Plan.

**Recommended Actions:** Prior to 1997 emphasis in weed control focused on the use of biological and cultural controls (cultural control uses plant competition to maintain or enhance desired plants) on the southern part of the Forest and the use of herbicides on the north end of the Forest. In 1996, a Noxious Weed Control Provision was added to the timber sale contracts. In 1997, the Herbicide Weed Control EA was issued giving the Forest the ability to use a more integrated approach to controlling weeds. These actions are occurring under the direction of the Forest Plan and should help improve the noxious weed situation on the Forest. It is recommended that no changes are needed in the Forest Plan at this time.

**Future Actions:** The KNF *Noxious Weed Handbook* is being updated to include nine more noxious weed species. The additions include the species that the State of Montana added to their list in January of 2000 plus others that are being observed on the KNF. The species are plumeless thistle, bugloss, dwarf snapdragon, scotch thistle, common burdock, germander speedwell, common speedwell, tall ranunculus, and tamarisk spp. These species will also be added to the field transect form. A new category is also being added. It will be labeled *Ic New Invaders (medium populations)* and will have a status of *medium populations at limited sites*.

## BIBLIOGRAPHY

- Hirsch, S.A., and J.A. Leitch. 1996. *The Impact of Knapweed on Montana Economy*. Agricultural Economic Report No. 355., Dept. of Agri. Econ., Agri. Exp. Sta., North Dakota State Univ., Fargo, ND.
- Hitchcock, C.L., and L. Cronquist. 1973. *Flora of the Pacific Northwest*. 8th Printing 1991. Illustrations by Jeanne R. Janish. Univ. of Wash. Press, Seattle and London. 730 pp.
- Kootenai National Forest. 1999. *Noxious Weed Handbook*.
- USDA Agri. Res. Ser. and MT Dept. of Agri. Montana State Univ. 1996. *Biological Control of Weeds in the West*. ed. by Norman Rees et al. Western Society of Weed Science. Bozeman, MT.
- USDA Forest Service, Northern Region. 1996. *Noxious Weed Treatment Program*. Final Environmental Impact Statement, Kootenai National Forest, Libby, MT. 72 pp.
- USDA Forest Service, Northern Region. 1987. *Kootenai National Forest Plan - Final Environmental Impact Statement*, Vol. 2. 405 pp.
- USDA Forest Service, Northern Region. 1987. *Kootenai National Forest - Land and Resource Management Plan*, Vol. 1 201 pp.
- USDA Forest Service, Northern Region. 1987. *Kootenai National Forest - Record of Decision*. 44 pp.
- USDA Forest Service, Northern Region. 1997. *Herbicide Weed Control, Environmental Assessment*. Kootenai National Forest, Libby, MT. 50 pp plus appendices.

## TIMBER: Allowable Sale Quantity (ASQ); Monitoring Item E-1

**ACTION OR EFFECT TO BE MEASURED:** Determine if the sell volume meets the projections of the Forest Plan, including other permissible sale volumes.

**VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:** +/- 5 percent deviation for the ASQ volume, and +/- 10 percent deviation for the other permissible volumes.



**Purpose:** This monitoring item was established to help ensure that the ASQ stated in the Forest Plan is not exceeded and, if the ASQ is not attained, why. The Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both high.

**Background:** The ASQ is a projected maximum or ceiling and not a target to be reached at the expense of other considerations. The Forest's projected total maximum timber sell volume for the decade from suitable management areas is 2,270 million board feet (MMBF), which is an average of 227 MMBF per year (see Forest Plan, Appendix 11). In addition, 60 MMBF was estimated to be sold from unsuitable management areas, averaging six MMBF per year. These two components of suitable and unsuitable sell volumes comprise the total potential timber sale program of 2.3 billion board feet for the decade, which is an average of 233 MMBF per year.

In November 1995, the Chief of the Forest Service issued a decision on a Forest Plan appeal related to a technical error in the calculation of the Forest's ASQ. The issue centered on how timber age classes were cataloged in the inventory information used to calculate ASQ. A description of the problem is in the FY92 Monitoring Report. The decision required that the Forest is not to exceed a sell volume of 150 MMBF per year until the Plan is either amended or revised.

**Results:** Table E-1-1 shows that sell volumes have declined from approximately 200 MMBF/yr to about 41 MMBF per year between FY 88 and FY00. The average annual amount sold has been 106 MMBF from suitable lands, and 1.5 MMBF from unsuitable lands. In total, this amounts to 107.7 MMBF average per year for the past thirteen years. This actual sell volume is well below the ASQ limit as set in the Plan.

**Evaluation:** After 13 years of implementation, the trend of decreasing sell volume is continuing. In the FY92 and FY97 Monitoring Reports, the Forest reported in detail on a number of factors that caused this decrease. Most of these factors are still influencing the sell volume. The first five years of implementation, sell volume was relatively high, averaging 161 MMBF/year (see the FY92 Monitoring Report). During the second five years of implementation, sell volume averaged about 81 MMBF/year. The volume sold in FY00 is the lowest of the preceding 13 years.

In the past few years, additional factors have influenced the timber sales program. The most significant was additional streamside protection measures as required by the Inland Native Fish (INFS) Decision of July, 1995. Also, the USFWS amended biological opinion for grizzly bear recovery was issued July, 1995 and changed how recovery processes would take place on the Forest.

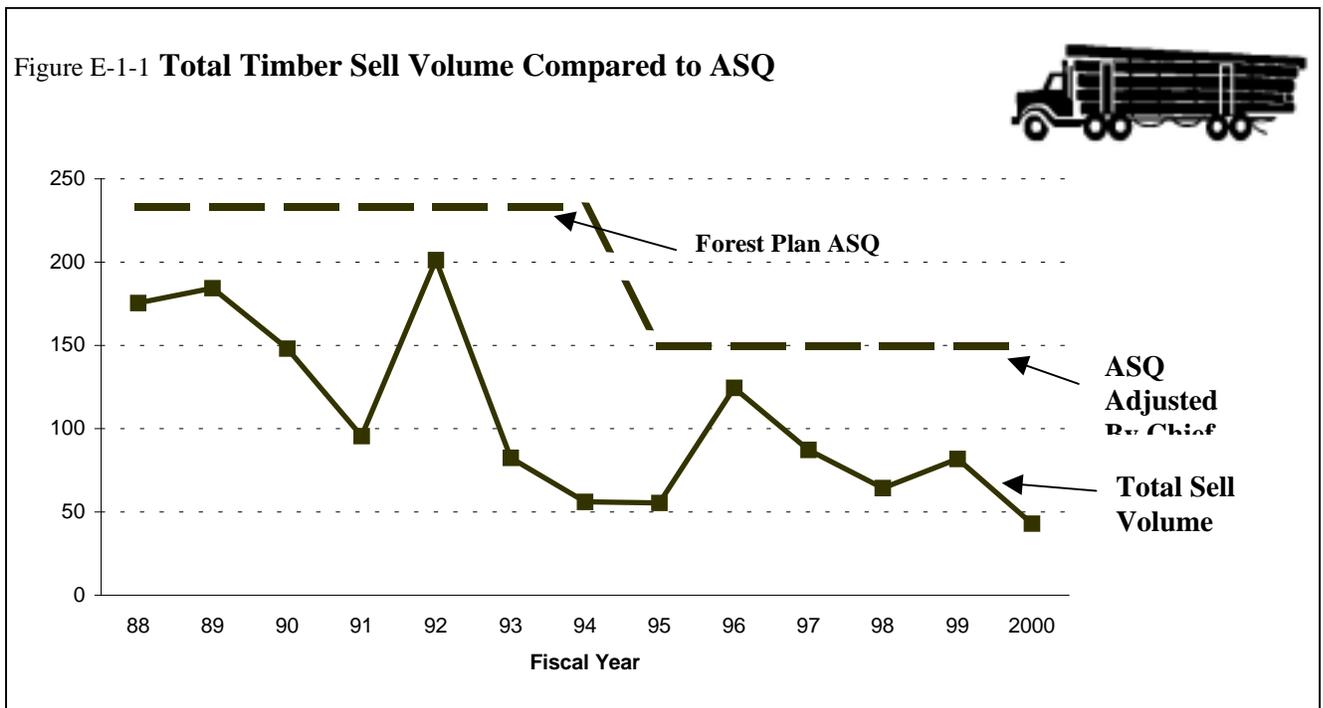
In general, it has become more difficult to plan and execute sales due to public controversy and scheduling requirements necessary to meet resource needs.

The evaluation limit for this monitoring item is plus or minus 5 percent for suitable volumes and plus or minus 10 percent for unsuitable volumes. These limits have been exceeded, and this indicates that evaluation of these factors which started in the FY92 Monitoring Report will need to continue during the revision of the Forest Plan.

Table E-1-1 **Timber Sell Volumes (MMBF) by Category by Fiscal Year**

	Forest Plan Annual ASQ Projection	Average Sell Volume FY 88-92	Average Sell Volume FY93-97	FY 1998	FY 1999	FY 2000
Suitable Lands	227	159	81	61.6	79.8	41.1
Unsuitable Lands	6	2	0.4	2.8	1.9	2.0
Total Timber Sell Program	233	161	81.4	64.4	81.7	43.1

Figure E-1-1 **Total Timber Sell Volume Compared to ASQ**



**Recommended Actions:** The Forest has not exceeded the ASQ in 13 years of implementation. However, large changes in the actual program levels versus the projections of the Forest Plan indicate that revision of the Plan will need to address the sustainability of the timber sale program. This will be a part of the initial issues for scoping during the revision of the Forest Plan.

## TIMBER: Acres of Timber Sold for Timber Harvest; Monitoring Item E-2

ACTION OR EFFECT TO BE MEASURED:

Determine if the regeneration harvest acres meet Forest Plan projections by management area.

VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:

+/- 10% by management area.



**Purpose:** This monitoring item was established to help ensure that harvest acreages and volumes sold are closely correlated. The Forest Plan requires that this monitoring item be reported annually. The expected accuracy and reliability of the information are both high.

**Background:** The acres to be harvested as projected by the Plan are located in six different management areas (MAs). 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, budget requirements, or environmental effects. (For more information on the Forest Plan MA requirements, see Chapters II and III of the Plan.)

The Plan projects 15,740 acres of annual regeneration harvests to achieve the ASQ. Regeneration harvests include clear cut, seed tree, and shelterwood cutting methods. Salvage and sanitation cuts are not included in the acreage figure.

**Results:** Table E-2-1 shows the acres sold for regeneration harvest by MA for the first thirteen years of implementation and for FY00. During FY00, the general downward trend that had been apparent in most years remained in place. The acreage sold for regeneration harvest is highest for MA 15, while five other suitable timber MAs (11, 12, 14, 16, and 17) continued to be well below Forest Plan projected amounts. Additional harvest occurred in FY00, but was either salvage or intermediate harvest that did not result in a regenerated stand.

For the first thirteen years of implementation, MA 11 and 15 were closest to the projected harvest amounts while MA 12, which is managed for a combination of timber and big game habitat, has the largest average acreage deviation. MA 14 and 16 show large percentage differences between projected and actual, although the acreage planned for regeneration harvest in these areas is much less than that planned for MA 12. Very little regeneration harvest was accomplished in MA 17 lands; however, relatively little was projected.

**Evaluation:** Many of the factors affecting this monitoring item are similar to those affecting item E-1, Allowable Sale Quantity. As stated in the evaluation for that item, wildlife habitat management, watershed concerns, litigation, appeals, deferrals, and changes in management area designation (particularly designation of old growth management areas from suitable timber harvest MAs) have all affected the potential to meet the Plan's projected regeneration harvest. One additional factor in

the decline in acres sold for harvest through regeneration methods is the strong trend away from regeneration harvest to more intermediate cuts, salvage and individual tree harvest methods.

Table E-2-1 Acres of Timber Sold for Harvest by Fiscal Year (Regeneration Harvest Methods Only)

MA	Forest Plan Projection	FY 99 Acres Sold	FY 99 % of Projected	FY 00 Acres Sold	FY 00 % of Projected	13-Yr Average (1988 - 2000)	Average % of Projected (1988 - 2000)
11	690	40	6%	31	4%	337	49%
12	8,800	187	2%	137	2%	2,586	29%
14	1,220	16	1%	0	0%	194	16%
15	2,050	429	21%	731	36%	1,844	90%
16	2,520	175	7%	0	0%	374	15%
17	460	36	8%	0	0%	46	10%
<b>Total</b>	<b>15,740</b>	<b>883</b>	<b>6%</b>	<b>899</b>	<b>6%</b>	<b>5,382</b>	<b>34%</b>

Since harvest has focused on MA 15 lands throughout the implementation of the plan, it indicates that there are efficiencies present for that MA that are not present for the other MAs. Assessment work for Forest Plan revision will need to determine both future opportunities for MA 15 and the problems, which prevented greater utilization of the other management areas for timber harvest.

**Recommended Actions:** It is apparent that the acres sold for regeneration harvest will not meet the acreage projected in the Forest Plan. The upcoming revision of the Plan will provide the opportunity to assess appropriate levels of harvest volume and acreage.

**TIMBER: Suitable Timber Management Area (MA) Changes; Monitoring Item E-3**

ACTION OR EFFECT TO BE MEASURED:	Determine if significant cumulative changes are occurring in the suitable timber base by tracking management area boundary changes.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 5,000 acre cumulative total change in any suitable timber management area.



**Purpose:** This monitoring item was established to help ensure that the suitable timber base was being validated before any projects were authorized and to determine what influence any significant changes have on the ASQ. The Forest Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both high.

**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 MAs 11, 12, and 14-17. These MAs are validated during site-specific project analysis. When inaccuracies are found, an MA boundary correction 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. The important items to track are the total changes by MA and the net gains or losses in suitable timber acreage. The most common conditions that cause an MA map change are mapping and drafting errors found on the original maps, non-productive forest land located within an MA mapped as productive (the reverse situation is also found), big-game winter range habitat is non-existent where originally mapped (the reverse is also found), or additional acreage is designated to meet the 10 percent minimum old growth standard. Differences in calculating acreages also occurred in FY95-96 when the Management Areas were converted to GIS.

**Evaluation:** Table E-3-1 displays the net MA acreage changes in suitable timberland for the last twelve years (FY88-00) and the net change in all suitable timberland. Acreage losses occurred in MA 12, 14, 16 and 17, while MA 11 and 15 gained acreage in FY00. Total net loss in the suitable timber land in FY00 was 902 acres. Table E-3-1 also shows this information for the largest unsuitable MAs. Most of these MA changes were made in the process of designating MA 13 and other old growth management areas. The pattern of change has been fairly consistent in both magnitude and direction. This monitoring item is outside the prescribed range for MAs 11, 15 and 16 (more than 5,000 acres of change). The remaining suitable timber MAs are within evaluation limits (MAs 12, 14, 17).

**Recommended Actions:** The degree to which changes have been made to management area designations indicate continuing validation of Forest Plan data. The change in the suitable management area category (over 60,000 acres) amounts to approximately three percent of the total suitable base. At this time, it is not apparent that this is significant in terms of the calculation of the long term sustainability of the timber harvest program or ASQ. During revision of the Forest Plan, sustainability and ASQ calculations will be made using the validated management areas. This will allow for an assessment of the effect of changed management area designations.

**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 Chg to Suitable MAs
1988	330	0	1,070	(1,760)	(510)	0	(870)
1989	(1,142)	(345)	386	253	(22)	(48)	(918)
1990	(164)	(420)	(130)	(4,273)	916	(661)	(4,732)
1991	78	(442)	(1,050)	(3,188)	(1,414)	(281)	(6,297)
1992	(9,279)	(3,178)	(196)	(1,711)	(1,498)	(323)	(16,185)
1993	(1,329)	1,000	(705)	(7,444)	(2,271)	22	(10,727)
1994	(109)	(402)	106	524	111	(148)	82
1995	(457)	1,441	131	(1,845)	(193)	0	(923)
1996	(1,370)	2,743	(206)	(1,679)	229	440	157
97CLE*	(127)	(2,030)	2,392	(8,680)	(2,689)	(494)	(11,628)
97 other	(2,215)	2,168	(66)	(5,055)	(625)	366	(5,427)
1998	(827)	(1,075)	(1,432)	90	75	(60)	(3,229)
1999	316	1,434	(648)	(1,281)	(1,801)	(1,168)	(3,148)
2000	754	(894)	(434)	404	(307)	(425)	(902)
<b>Total Net Chg to MA</b>	<b>(15,541)</b>	<b>0</b>	<b>(782)</b>	<b>(35,645)</b>	<b>(9,999)</b>	<b>(2,780)</b>	<b>(64,747)</b>

Suitable MAs indicate productive forest lands with consideration for other resources determining the difference among them. MA 15 lands are managed primarily for high timber yields. MA 11 and 12 are lands, which can provide for timber and big game habitat (11 for winter range and 12 for summer range). MA 14 areas are timberlands, which have been identified as essential for recovery of the grizzly bear. MA 16 and 17 indicate areas where protection of the visual resource is important. \* The Checkerboard Land Exchange is shown as a separate breakout in FY97.

**Table E-3-2 Net Acreage Changes by Management Areas (MA) in Unsuitable Timberland**

Fiscal Year	MA 2	MA 10	MA 13	MA 18	MA 19	MA 24	Total chg to Unsuitable MAs
1988	240	1,670	(500)	190	(280)	480	1,800
1989	842	0	(149)	32	135	100	960
1990	150	1,080	1,877	381	(950)	2,564	5,102
1991	1,009	574	4,135	(140)	(231)	1,724	7,071
1992	196	3,211	7,980	2,656	231	823	15,097
1993	(338)	374	7,931	(595)	(2,115)	2,618	7,875
1994	(173)	(69)	914	(437)	(294)	177	118
1995	181	(643)	1,788	(657)	112	(128)	653
1996	32	(550)	3,290	(1,725)	(630)	(649)	(232)
97 CLE*	12,777	(149)	(2,249)	(417)	(464)	(1,581)	7,917
97 other	109	(550)	8,501	(1,625)	(644)	(165)	5,626
1998	37	(170)	2,797	(56)	(108)	(113)	2,387
1999	(131)	366	3587	(145)	(343)	(331)	3,003
2000	28	307	1,282	347	10	(49)	1,925
<b>Total Net chg to MA</b>	<b>14,959</b>	<b>5,451</b>	<b>41,184</b>	<b>(2,191)</b>	<b>(5,571)</b>	<b>5,470</b>	<b>59,302</b>

Unsuitable MAs are used for areas where timber production is not a primary consideration; for example, MA 2 is Roadless Recreation; MA 10 is big game winter range not suited for timber production; MA 13 is protected old growth habitat; MA 18, 19, and 24 are lands with little timber value or lands difficult to regenerate (rocky areas, steep slopes). Other unsuitable MAs identify Wilderness, Special Interest Areas, Administrative Sites, etc. Included within unsuitable MAs are areas of inventoried old growth not identified as MA 13.

NOTE: The differences displayed in the Fiscal Year totals and the Total MA Changes in the two tables shown above are the result of eight additional MAs which contain some minor changes (usually less than 200 acres each) plus the lands that have been acquired and disposed of in the land exchanges completed during the years since the Forest Plan was approved. In FY95 and FY96, there were also changes to all MAs due to the process of converting to GIS.

## TIMBER: Timber Harvest Deferrals; Monitoring Item E-7

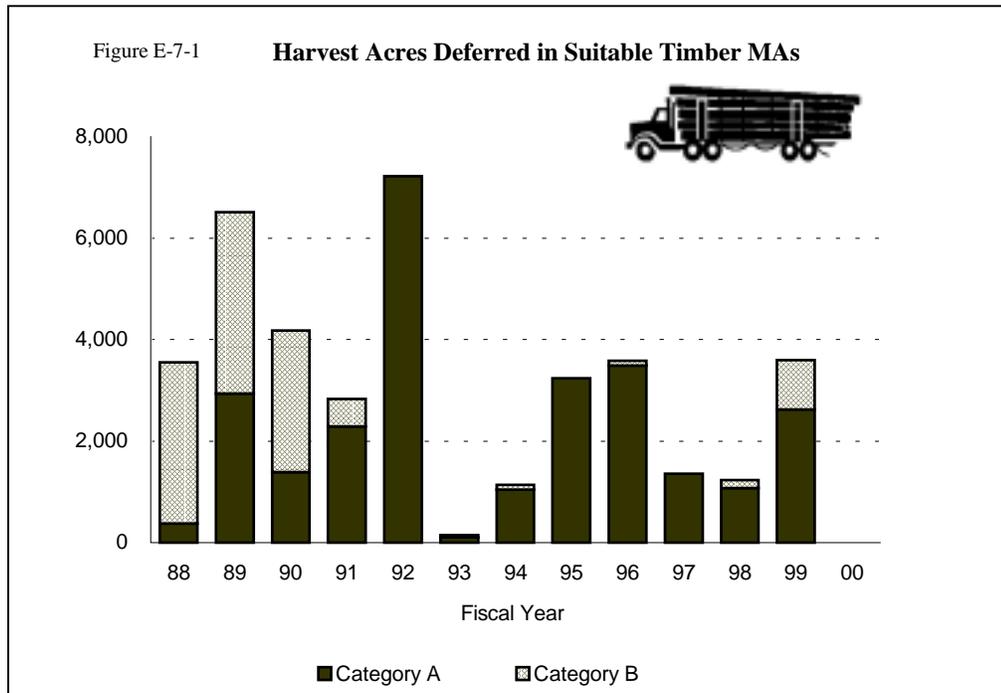
**ACTION OR EFFECT TO BE MEASURED:** Determine the suitable timber acreage deferred from timber sales because of economics, resource conflicts, or other unforeseen reasons.

**VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:** More than 10,000 acres cumulative change in any suitable management area (MA).



**Purpose:** This monitoring item was established to help ensure that the allowable sale quantity (ASQ) is reasonable. Any significant changes in the acreage available for timber harvest could affect the ASQ because it was determined by estimating the maximum amount of available harvest acreage in the first decade while still meeting all the required Forest Plan standards. The Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both moderate.

**Background:** To determine the effect of harvest deferrals on the timber sale program, monitoring is done in two different categories. **Category A** deferrals are those that result from our project-specific conclusions about resource or economic conflicts that were not adequately accounted for in the Plan. Examples are road construction that is too expensive or a threatened, endangered, or sensitive species found which was unknown during Forest Planning. **Category B** deferrals are those that result from an externally imposed situation. Examples include appeals and court injunctions or significant timber harvest on adjacent private land that could exceed thresholds and may degrade watersheds if the Kootenai Forest timber is harvested before adequate watershed recovery occurs on the private land. Please note that suitable timber acres rescheduled from one year to a later year within the 15 year period are not considered deferred.



**Table E-7-1 Deferred Harvest Acres by suitable Management Area (MA)**

Category and Fiscal Year	MA 11	MA 12	MA 14	MA 15	MA 16	MA 17	Total
<b>Category A</b>							
88	15	340	25	0	0	0	380
89	95	2,434	68	196	138	0	2,931
90	89	779	107	120	298	0	1,393
91	204	1,629	360	38	60	0	2,291
92	66	4,886	2,186	76	0	0	7,214
93	0	106	0	0	0	0	106
94	0	77	963	0	0	0	1,040
95	8	1,449	0	936	842	0	3,235
96	0	3,257	234	0	0	0	3,491
97	23	1,163	173	0	0	0	1,359
98	716	44	195	101	19	0	1,075
99	1,738	241	281	158	75	129	2,622
00	0	0	0	0	0	0	0
<b>Subtotal Cat. A</b>	<b>2,954</b>	<b>16,405</b>	<b>4,592</b>	<b>1,625</b>	<b>1,432</b>	<b>129</b>	<b>27,137</b>
<b>Category B</b>							
88	0	2,580	274	314	0	0	3,168
89	198	2,274	301	766	30	8	3,577
90	403	912	62	1,164	168	80	2,789
91	7	60	0	427	50	0	544
92	0	0	0	0	0	0	0
93	0	33	0	0	11	0	44
94	0	0	0	0	0	97	97
95	0	0	0	0	0	0	0
96	0	95	0	0	0	0	95
97	0	0	0	0	0	0	0
98	0	0	0	154	0	0	154
99	0	419	0	0	500	54	973
00	0	0	0	0	0	0	0
<b>Subtotal Cat. B</b>	<b>608</b>	<b>6,373</b>	<b>637</b>	<b>2,825</b>	<b>759</b>	<b>239</b>	<b>11,441</b>
<b>Totals A and B</b>							
88	15	2,920	299	314	0	0	3,548
89	293	4,708	369	962	168	8	6,508
90	492	1,691	169	1,284	466	80	4,182
91	211	1,689	360	465	110	0	2,835
92	66	4,886	2,186	76	0	0	7,214
93	0	139	0	0	11	0	150
94	0	77	963	0	0	97	1,137
95	8	1,449	0	936	842	0	3,235
96	0	3,352	234	0	0	0	3,586
97	23	1,163	173	0	0	0	1,359
98	716	44	195	255	19	0	1,229
99	1,738	660	281	158	575	183	3,595
00	0	0	0	0	0	0	0
<b>FY 88-00 TOTALS</b>	<b>3,562</b>	<b>22,778</b>	<b>5,229</b>	<b>4,450</b>	<b>2,191</b>	<b>368</b>	<b>38,578</b>

**Results:** Table E-7-1 displays deferred harvest acres by category for each suitable timber management area on the Forest for FY88-00. In FY00 no acres were deferred.

**Evaluation:** There were no deferred acres in FY00.

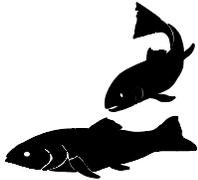
Table E-7-1 shows that for the entire period from FY88-00, 38,578 acres were deferred for both Categories A and B. The largest amount for a single MA is 22,778 acres that were deferred in MA 12. This is the largest amount of all the MAs and is beyond the prescribed evaluation range of 10,000 acres. MA 11, 14 and 15 also had large amounts of harvest deferred, although they did not exceed the 10,000-acre evaluation range.

**Recommended Actions:** This item indicates that many more factors affect harvest than was accounted for during the preparation of the Forest Plan. Since the Forest now has detailed records of such factors, it will be more able to assess those effects during Plan revision. These factors will continue to be monitored, and brought forward in the revision process.



## RIPARIAN: Riparian Areas; Monitoring Item C-9

ACTION OR EFFECT TO BE MEASURED:	Ensure that the intent of riparian management goals are met.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Failure to meet state and Inland Native Fish Strategy (INFS) standards.



**Purpose:** This monitoring item was established to help ensure that the intent of riparian management goals is met. With the INFS amendment, the Forest Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both high.

**Background:** Riparian zone management is one of the most important practices to maintain water quality and a large number of riparian-dependent resources. Riparian management involves implementing actions that maintain or improve riparian conditions, and identification and mapping so resource managers know the area of concern and application. Thus, one of the Plan objectives is to site-specifically identify and map all riparian areas before any projects such as timber sales are authorized (Forest Plan, page II-11).

Since the Plan was approved, Forest guidelines have been completed for the identification, mapping, and management standards necessary to protect riparian areas. Forest Plan Appendix 26, Riparian Area Guidelines, was issued in 1991 and was further updated in 1994 with the passage of the Montana Streamside Management Zone (SMZ) Law (HB731). These Guidelines stratify the Forest into four different stream classes. These stream classes are:

- Class I: large perennial streams
- Class II: smaller perennial streams
- Class III: intermittent streams
- Class IV: dry draws, swales

Classes I, II, and III require specific resource considerations before any activities can proceed. Some restrictions also apply to Class IV streams, wetlands, ponds, and bogs. Implementation of the Soil and Water Conservation Practices Handbook after 1988 and statewide implementation of voluntary Forestry Best Management Practices in 1989 have also aided the improvement of riparian conditions.<sup>1</sup>

In 1995, the Decision Notice for the Inland Native Fish Strategy (INFS) EA amended the Forest Plan by providing an interim strategy to protect native fisheries until a decision is issued for the Upper Columbia River Basin Environmental Impact Statement. The need to modify the existing Plan was determined, in part, from the monitoring of 28 National Forests, which indicated that many watersheds were below Forest Plan standards or exceeded thresholds of concern. INFS modified

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<sup>1</sup>Please refer to Monitoring Item F-1, Soil and Water Conservation Practices, for a fuller explanation of how Best Management Practices are monitored.

Forest Plan direction by adding additional requirements to manage fish habitat and channel conditions as well as the standard riparian vegetation zone.

INFS identified riparian management objectives (RMOs) and riparian habitat conservation areas (RHCAs) for streams depending on the size of stream and whether it contained a fishery. INFS only modified those portions of the Kootenai Forest Plan that were less restrictive than INFS.

INFS identified four stream categories, based on length of flow-period and fishery presence or absence:

- Category 1: perennial fish-bearing streams
- Category 2: perennial flowing, non-fish-bearing streams
- Category 3: ponds, lakes, reservoirs, and wetlands
- Category 4: seasonally flowing or intermittent streams

The transition from the original Forest Plan direction to INFS implementation has been a gradual increase in the restrictions placed on riparian zone activities. For instance, the 1991 Riparian Area Guidelines established, by stream class, minimum width of SMZs, number of trees that had to be left after harvest, which classes had restrictions on both-side harvest, maximum unit length, and amount of total harvest per decade per mile of channel length. The 1994 update of the Riparian Area Guidelines incorporated the Montana State SMZ Law, widening the minimum-width of the SMZ. It also mandated percent rather than number of leave-trees, and required protection of all classes of channels.

With the implementation of INFS in 1995, overall riparian area activities allowed became more restricted. For instance, the width of riparian zones (called Riparian Habitat conservation Areas [RHCAs] in INFS) increased. Additional standards and guidelines are applied, including requirements for extensive analysis before harvesting in some classes of watersheds. As a result, there was a dramatic reduction in riparian zone activities.

INFS also requires monitoring of the interim direction. The primary focus of this monitoring is to verify that the standards and guidelines were applied during project implementation. Monitoring is also to assess whether the standards are effective to attain Riparian Goals and Management Objectives (RMOs).

**Results:** With the modification of the Forest Plan by INFS, five approaches are used to track this item:

- 1) Riparian Mapping;
- 2) RHCA/RMO modification documentation;
- 3) RHCA activity tracking;
- 4) Watershed and stream restoration activities;
- 5) Riparian area BMP results.

**1) Riparian Mapping: Miles of stream classes and/or stream categories identified and mapped.** Table C-9-1 displays the miles of riparian habitat that have been classified and mapped since 1988. Almost 6000 lineal miles of riparian habitat have been categorized and mapped since 1988. Over

3400 of these miles are on perennial streams (Stream Classes 1 and 2, INFS Categories 1 and 2). The rest are intermittent and ephemeral streams (Stream Classes III, INFS Category 4).

Table C-9-1 Miles of Stream Classes Identified and Mapped

Fiscal Year	Stream Class 1 & 2; INFS Category 1 & 2; (perennial streams)	Stream Class III; INFS Category 4, (intermittent and ephemeral streams)	Total Miles
1988-89	136	79	215
1990	409	246	655
1991	392	244	636
1992	363	299	662
1993	205	204	409
1994	157	87	244
1995	235	307	542
1996	451	281	732
1997	201	102	303
1998	207	171	378
1999	559	497	1056
2000	110	46	156
<b>Totals</b>	<b>3,425</b>	<b>2,563</b>	<b>5,988</b>

**2) RHCA/RMO modification documentation:** This is tracked to determine whether INFS standards and guidelines were applied during projects. In particular, this item identifies where default RMOs and RHCA widths may have been modified based on site-specific analysis. In FY00, however, default RHCA widths and default RMOs were applied on all projects on the KNF.

**3) RHCA activity tracking:** In FY00, a little over 15 miles of RHCA had some level of activity. Most of the work was for road re-construction, improvement of road crossings, road drainage improvement, and trail maintenance and improvement along streams.

**4) Watershed and stream restoration activities:** In 2000, riparian-related watershed restoration activities were accomplished on over 265 miles of stream. Over 100 stream crossings were removed or improved, and almost 100 acres of riparian areas had some level of watershed improvements. Since 1990, watershed restoration on the Forest has totaled over 6,700 acres.

**5) Riparian area BMP results:** This includes evaluation of implementation and effectiveness of applicable riparian BMPs that were used during management activities in or near the riparian zone (Table C-9-2). Table C-9-2 displays the results of the riparian-area BMP evaluation process from years 1990 through 2000. In even numbered years, results include information from State Audits. In odd numbered years, results are only from the on-forest BMP tracking program. The determination of proper BMP application is referred to as implementation monitoring. The determination of whether the BMP worked or not is effectiveness monitoring.

In FY00, the combination of Forest and State BMP Audits evaluated 201 specific practices within riparian areas. Acceptable implementation was accomplished 97 percent of the time. One hundred fourteen effectiveness evaluations were completed for this same period, of which 98 percent of the BMPs were deemed to be effective. For three additional projects, a riparian-area specific BMP evaluation was made. On all three of these projects, BMP requirements related to riparian area protection were met.

For the over 2600 practices evaluated over the ten-year period, acceptable implementation was accomplished 92 percent of the time. Over eighteen hundred effectiveness evaluations were completed for this same period, of which 92 percent were deemed to be effective.

**Table C-9-2 Riparian Area BMP Implementation and Effectiveness**

<b>Fiscal Year</b>	<b>Data Source</b>	<b>Implementation Evaluations</b>	<b>Percent Acceptable or Better</b>	<b>Effectiveness Evaluations</b>	<b>Percent Acceptable or Better</b>
<b>1990</b>	Forest & State (EQC) MBMP Audits	201	89%	82	87%
<b>1991</b>	Forest-wide BMP Audits	145	95%	145	95%
<b>1992</b>	Forest & State (EQC) MBMP Audits	241	88%	241	96%
<b>1993</b>	Forest-wide BMP Audits	226	96%	120	92%
<b>1994</b>	Forest & State (EQC) MBMP Audits	295	91%	117	99%
<b>1995</b>	Forest-wide BMP Audits	503	83%	467	82%
<b>1996</b>	Forest & State (EQC) MBMP Audits	428	96%	169	98%
<b>1997</b>	Forest-wide BMP Audits	254	97%	226	95%
<b>1998</b>	Forest & State (EQC) MBMP Audits	43	91%	117	99%
<b>1999</b>	Forest-wide BMP Audits	74	100%	15	87%
<b>2000</b>	Forest & State (EQC) MBMP Audits	201	97%	114	98%
<b>Totals</b>		2,611	92%	1,813	92%

**Conclusion:** Riparian zones are being identified and mapped as part of Forest Plan implementation. Forest Plan Appendix 26, Riparian Area Guidelines, and INFS direction are being followed. After increased emphasis over the last five years, riparian areas discovered during layout and sale

administration are being identified and protected. Review of this portion of the monitoring item indicates we are successfully applying riparian considerations to projects. We are effectively applying the Riparian Area Guidelines, INFS direction, and riparian BMPs on projects; therefore, we are on-track with the Forest Plan. Because of the new direction from INFS, no change to Plan direction is needed at this time.

**Recommended Actions:**

- Continue emphasis on BMP implementation and evaluate effectiveness.
- Continue to monitor a sample of projects where RHCA's have been site-specifically modified or harvest allowed within the RHCA to see how the activities were implemented and what, if any, long-term effect these activities had on the riparian condition.
- Continue to monitor a sample of projects to evaluate whether the Riparian Area Guidelines/INFS are meeting their objectives or whether there is a need to change direction.
- Assemble existing data, and begin to collect additional data, to develop more appropriate localized-RMOs for this Forest.

## SOIL & WATER: Soil and Water Conservation Practices; Monitoring Item F-1

**ACTION OR EFFECT TO BE MEASURED:** Determine if regional and project soil and water protection practices protect soil and water resources and water quality.

**VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:** Failure to meet State Standards and Protect Beneficial Uses.



**Purpose:** This monitoring item was established to try to ensure that State water quality standards are met. The Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both high.

**Background:** The Forest has been monitoring the Soil and Water Conservation Best Management Practices (BMPs) since 1988. These BMPs are required forest wide to meet State water quality standards, and to meet our MOU obligation with the Department of Environmental Quality that makes the FS the management agency for water quality protection on National Forest System lands. The BMPs are various practices that are designed to eliminate or reduce non-point sources of pollution such as sediment, which is the primary source of non-point pollution on the Forest. Other BMPs seek to protect and conserve the soil resource. BMP monitoring consists of two parts: 1) determine whether the practice (BMP) was applied on-the-ground as called for; and 2) if applied correctly, did it eliminate or minimize the effect that required the BMP. The determination of proper BMP application is referred to as implementation monitoring. The determination of whether the BMP worked or not is called effectiveness monitoring.

Projects that are evaluated for BMP implementation and effectiveness include timber harvest, road construction and reconstruction projects, mine site rehabilitation, and other activities that expose or disturb soil, creating ground conditions that could lead to water quality impacts; or that adversely affect the soil resource.

In 1998, the Forest implemented a new BMP program to better protect soil and water resources. One of the elements under this new program, Supervisors Office-level BMP Reviews, was to be performed on three districts this year. However, due to the closing of the woods from a fire-danger perspective, and then the length of the fire season, no Reviews could be accomplished. Another element of BMP Monitoring, continued and emphasized under the new program, is the spot review of selected activities. Spot monitoring of selected activities is conducted to determine BMP effectiveness as well as determining compliance with our requirement to protect beneficial uses of water, including fisheries and aquatic habitat.

### RESULTS:

FY00 BMP monitoring on the Forest involved two different efforts: 1) BMP monitoring done by Kootenai National Forest personnel during their normal work activities; and 2) BMP monitoring coordinated by the Forestry Division, Department of Natural Resources and Conservation (DNRC), as part of a larger Statewide Forestry BMP Audit. During all of these efforts, BMPs were evaluated at particular sites on various projects across the Forest. The implementation and effectiveness monitoring evaluations were both rated as shown in Table F-1-1.

Table F-1-1 **BMP Evaluation Rating Scale and Summary**

<b>Rating</b>	<b>Implementation</b>	<b>Effectiveness</b>
Acceptable or Better	Operation Meets Requirements	Adequate or Improved Protection of Soil and Water Resources
Unacceptable	Minor Departure from Intent	Minor and Temporary Impact
Very Unacceptable	Major Departure from Intent	Major and Temporary, or Minor and Prolonged Impact
Grossly Unacceptable	Gross Neglect or No Application At All	Major and Prolonged Impact

**1) Results of BMP Monitoring Done by Kootenai Forest Personnel, including District and Zone Review Teams:** Thirty-two projects had implementation monitoring evaluations, and 28 projects had effectiveness evaluations accomplished in FY00 by KNF personnel. Implementation evaluations were completed for 169 BMPs and implementation evaluations met the requirement of acceptable over 98 percent of the time. Effectiveness evaluations in FY00 met the requirement of acceptable almost 96 percent of the time (see Table F-1-2).

Table F-1-2 **BMP Monitoring Results by Kootenai Forest Personnel**

	<b>Implementation (%)</b>										
	<b>90</b>	<b>91</b>	<b>92</b>	<b>93</b>	<b>94</b>	<b>95</b>	<b>96</b>	<b>97</b>	<b>98</b>	<b>99</b>	<b>00</b>
<b>Acceptable or Better</b>	96	96	93	98	99	92	98	98	97	98+	98+
<b>Unacceptable</b>	4	3	6	2	1	8	2	1.9	2.8	1.6	1.2
<b>Very Unacceptable</b>	0.4	1	0	0.2	0.02	0	0.02	0.1	0	*0	0**
<b>Grossly Unacceptable</b>	0	0	0	0	0	0	0	0	0	0	0
	<b>%)Effectiveness (%)</b>										
	<b>90</b>	<b>91</b>	<b>92</b>	<b>93</b>	<b>94</b>	<b>95</b>	<b>96</b>	<b>97</b>	<b>98</b>	<b>99</b>	<b>00</b>
<b>Acceptable or Better</b>	91	88	86	96	99	92	100	99	96.3	94.8	95+
<b>Unacceptable</b>	8	12	13	3	1	8	0	1.2	3.4	4.5	1.9
<b>Very Unacceptable</b>	1	0	2	1	0	0	0	.14	0.2	.07	2.4
<b>Grossly Unacceptable</b>	0	0	0	0	0	0	0	0	0	0	0

\*- 1 out of 1897 practices

\*\* 2 out of 1,040 practices evaluated

**Comments:** Only 3 of the 1040 practices evaluated for implementation and effectiveness showed up as problems (cited more than 5 times, total, for implementation and effectiveness):

SWCP 14.13- Special Erosion Prevention Measures On Areas Disturbed by Harvest Activities;

SWCP 15.7- Control of Permanent Road Drainage; and

SWCP 15.21- Maintenance of Roads.

For all three practices, Effectiveness was more of a problem than Implementation. This suggests either the practice was not implemented correctly, or we need to look at just how effective the practice is. Improvements to these identified problem-practices will be done as follows:

**SWCP 14.13-** In 2001, we will emphasize the identification of problem areas significantly disturbed by harvest activities and will emphasize identification of practices to be applied to those sites. Because of the problem in 2000, we will try to follow-up on these sites to closely evaluate the success of the site-specific implemented practices. This will be summarized in the FY2002 FP Monitoring Report.

**SWCP 15.7-** This was identified as a problem practice in the 1999 FP Monitoring Report, and was a problem as well in 1998. We are very actively identifying, and treating where possible, roads with this problem from older construction. This will continue and, hopefully, be reflected in next years' Report.

**SWCP 15.21-** For this Practice, four of the five less than acceptable scores came from one District. Especially on this District, we will emphasize how to correctly maintain roads without cutting into cut slopes, or putting materials in problem locations.

For all three of these practices, they will be emphasized in writing to District and Zone personnel as problem areas to watch out for in 2001.

**2) Results of BMP Monitoring Done by the State BMP Audit Team:** In 2000, five Kootenai National Forest timber sales were monitored as part of the statewide Montana Forestry Best Management Practices Implementation Monitoring Program. These audits were conducted under the supervision of the DNRC by an interdisciplinary team comprised of a fisheries biologist, a forester, a hydrologist, a representative of a conservation group, a logging/road engineer, a soil scientist, and, for the first time, a representative for small loggers in Montana.

The FY00 State BMP Team audited a total of 236 BMPs on the Kootenai. Implementation evaluations met the requirements of acceptable or better 95% of the time while 5% were rated unacceptable or worse. Effectiveness evaluations met the requirements of acceptable or better 98% of the time and only 2% were unacceptable or worse (see Table F-1-3). These two ratings are very similar to the Statewide averages of 96% and 98%, respectively, acceptable or better, for implementation and effectiveness.

Table F-1-3 **BMP Monitoring Results of KNF Sites by State BMP Audit Team**

	<b>Implementation (%)</b>					
	<b>90</b>	<b>92</b>	<b>94</b>	<b>96</b>	<b>98</b>	<b>00</b>
<b>Acceptable or Better</b>	84	83	84	92	89	95
<b>Unacceptable</b>	13	10	8	6	6	4
<b>Very Unacceptable</b>	3	6	2	2	4	1
<b>Grossly Unacceptable</b>	0	1	0	0	0	0
	<b>%)Effectiveness (%)</b>					
	<b>90</b>	<b>92</b>	<b>94</b>	<b>96</b>	<b>98</b>	<b>00</b>
<b>Acceptable or Better</b>	91	86	84	92	91	98
<b>Unacceptable</b>	8	7	7	4	4	1
<b>Very Unacceptable</b>	1	6	7	4	4	1
<b>Grossly Unacceptable</b>	0	2	2	2	0	0

The State BMP Audit Report process also separately evaluates the sensitive or "high-risk" BMPs and how they compared to the statewide average. The "high-risk" BMPs are those that are considered to be the most important in protecting watersheds and water quality.

Eight "high-risk" BMPs have been determined to be the most important for protecting Montana watersheds:

- III.C.1 Provide adequate road surface drainage for all roads.
- III.C.6 Route road drainage through adequate filtration zones before entering stream.
- III.D.2 Stabilize erodible soils (i.e., seeding, benching, mulching).
- III.E.2 Maintain erosion control features (dips, ditches, functional culverts).
- IV.A.5 Design and locate skid trails to avoid concentrating runoff.
- IV.B.5 Adequate drainage for temporary roads, skid trails, fire lines.
- IV.C.8 Limit water quality impacts of prescribed fire.
- V.C.4 Prevent erosion of culvert and bridge fills (i.e., armor inlet & outlet).

In this sensitive-BMP category, Implementation results for the KNF-audited sale were 79% acceptable or better, much lower than statewide average of 92%. Effectiveness results for the KNF sales were 87% acceptable, significantly below the statewide average of 93%.

**Emphasis and Action Items for 2001:** No changes to the Forest Plan are needed at this time. The following actions will occur to improve our implementation and monitoring efforts.

- Continue implementation of the Forest BMP Process and Program. This process emphasizes monitoring, implementation, evaluation, documentation, tracking, and completion of the feedback loop to improve resource protection. Utilize the findings from reports such as this to identify problems and solutions.
- Continue to hold an All-Forest field training session in the spring to cover all aspects of BMPs. Two sessions, one at each end of the Forest will be done this year.
- Conduct Supervisors Office-level BMP reviews on at least three Ranger Districts, to try to “catch up” on last summers’ schedule.
- Send a copy of this write-up to all Districts and Zones to identify the problems areas as well as the emphasis areas for FY2001.

## SOIL & WATER: Water Yield Increases; Monitoring Item F-3

ACTION OR EFFECT TO BE MEASURED:	Determine the cumulative level of water yield increases and the effects on stream channels.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	20 percent of watersheds exceed hydrologic guidelines.



**Purpose:** This monitoring item was established to track our progress in protecting water-dependent resources from effects of management-influenced high stream flows. The Forest Plan requires that this item be reported annually. The expected accuracy and reliability of the information are moderate to high.

**Background:** Water yield increases can adversely affect stream channels and fisheries habitat. The Plan states that projects involving significant vegetation removal will accomplish a cumulative watershed effects analysis to ensure that water yield and sediment levels do not increase beyond acceptable limits (Forest Plan, II-24). The Plan also references the dependence of timber harvest on the rate of hydrologic recovery (Forest Plan, II-4, 7).

Forest Plan Appendix 18 (Kootenai Forest Water Yield Model Instructions and support guidance memos) was provided to guide the process of accomplishing the cumulative effects analysis. This analysis procedure estimates the peak flow increase over natural conditions for a watershed or sub-watershed based on existing and proposed activities on both the public and private lands.

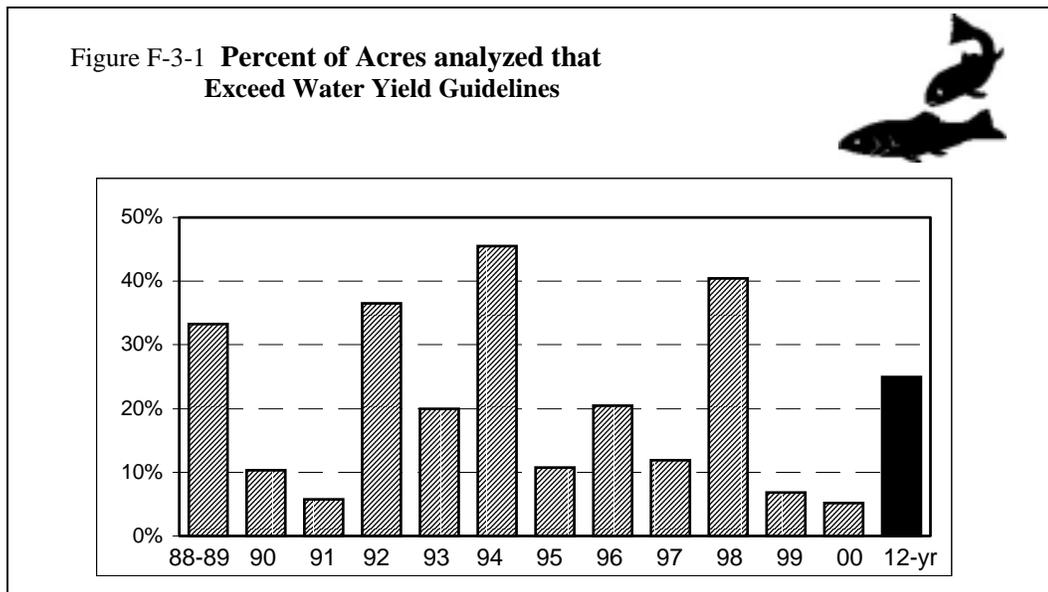
**Results:** The Forest has employed two methods to examine this data. Table F-3-1 tracks the watersheds that are evaluated as a part of project planning. Since these analyses are not randomly distributed around the Forest, results tend to be skewed in some years depending on which watersheds are being analyzed or re-analyzed.

Table F-3-2 and the Water Yield Analysis Map present an estimation of the Forest-wide condition based on a computer file of watersheds that is updated each year to indicate the results of the most current water yield analysis.

Table F-3-1 shows the results for each fiscal year. In FY00, the water yield model was used to estimate the peak flow increase on 135,835 acres of both National Forest and private land. Most of these watersheds had been analyzed in previous years. Of the total area analyzed during this fiscal year, 5 percent of the acres exceed Forest water yield guidelines. Channel damage has not necessarily occurred in watersheds shown to be exceeding water yield guidelines, since this monitoring item is based on computer modeling and not field observations and measurements.

Table F-3-1 Watersheds Analyzed for all Ranger Districts by Fiscal Year

Fiscal Year	Total Acres of Watersheds Analyzed	Acres of Watersheds Exceeding WY Guidelines	Percent of Analyzed Acres Exceeding WY Guidelines
88-89	944,170	314,404	33%
90	141,054	14,564	10%
91	226,836	13,020	6%
92	163,297	59,661	37%
93	83,479	16,654	20%
94	130,890	59,597	46%
95	277,229	29,682	11%
96	223,545	45,758	20%
97	141,171	16,827	12%
98	539,652	218,197	40%
99	172,538	11,777	7%
00	135,835	7,013	5%



Some of the totals in Table F-3-1 include reassessments of previously completed watersheds because of changed conditions. For instance, many acres were reanalyzed following the fires last summer. Many of those acres had been analyzed earlier as part of normal operations. It is also important to note that, in areas analyzed in earlier years, hydrologic recovery has been occurring and watershed restoration projects have been implemented. Due to these changed conditions, some of these areas may not exceed water yield guidelines today. Because of the reassessments done in later years, the information in Table F-3-1 cannot be totaled since some acres would be double-counted.

The second method summarizes the most recent analysis results for each watershed. This enables us to show a total for the Forest. This data is summarized to generate the figures for Table F-3-2. The map on the following page (Figure F-3-1) is shaded to show where watersheds have been analyzed and most recent analysis shows they meet or exceed Water Yield Guidelines. As noted above, some of these areas were last analyzed up to twelve years ago and conditions may have changed.

As shown in Table F-3-2, over 2,000,000 acres have been analyzed for water yield conditions on the Kootenai since 1988. Of this total, 1,609,000 acres (78 percent) were found to be at or below the guidelines and 459,000 acres (22 percent) were found to be over guidelines according to the most recent analysis in each area, which could be up to twelve years ago.

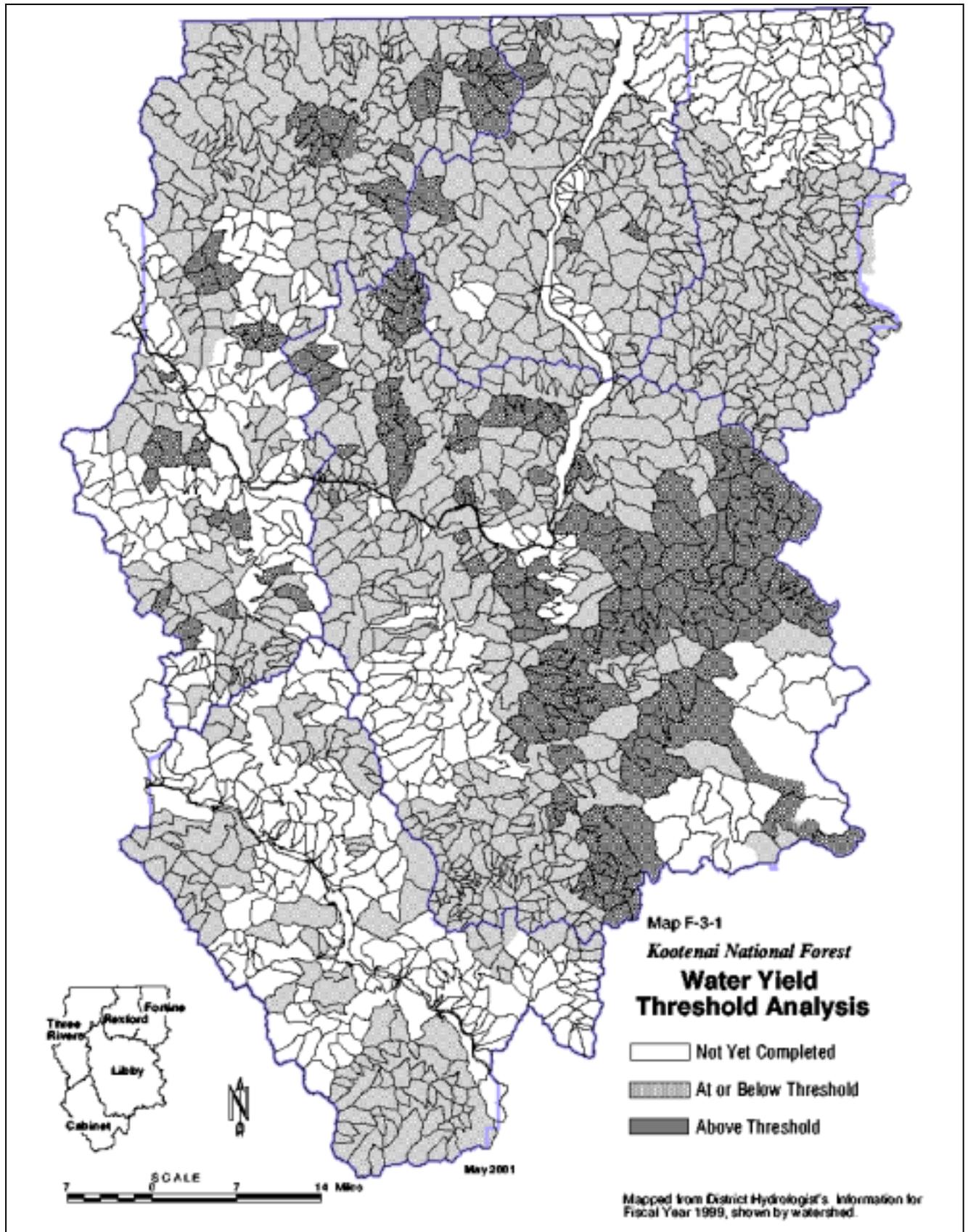
Table F-3-2 **Summary of Watershed Analysis Results** (includes private land)

<b>Fiscal Years</b>	<b>Acres of Watersheds Analyzed</b>	<b>Acres (and percent) of Watersheds That Meet WY Guidelines</b>	<b>Acres (and percent) of Watersheds Exceeding WY Guidelines</b>
FY 88- FY 00	2,068,000	1,609,000 78%	459,000 22%

**Evaluation:** Table F-3-1 shows 5 percent of the analyzed watershed acreage for FY00 exceed the peak flow water yield guidelines. As in prior years, the reasons for these current conditions are usually related to harvesting of timber in years prior to the implementation of the Plan, timber harvest on private lands, and relatively slow recovery of vegetation in certain watersheds. In addition, natural events such as wildfire have caused high mortality of trees in certain areas, resulting in conditions that cause increased runoff and peak flow increases. When such conditions are encountered in the project planning process, projects are designed so that peak flows still meet the Forest Plan guidelines to protect water quality and beneficial uses.

Table F-3-2 indicates that, for the period from FY88 to FY00, about 22 percent of the watershed acreage, including private land, is exceeding water yield guidelines. Figure F-3-2 is a map showing the watersheds where peak flow analysis has been done in one or more Fiscal Years since 1988 and also shows the results of the most current analysis.

This monitoring item continues to be off-track with the Forest Plan. It is important to note, however, that when projects are proposed in watersheds that are over the standard, they are designed to improve the long-term watershed condition, rescheduled, or dropped (See Monitoring Items E-1 and E-7). This monitoring item shows that water yield calculations and stream channel analysis is an important part of the analysis needed before projects can be implemented.



## HUMAN & COMMUNITY DEVELOPMENT: Emerging Issues; Monitoring Item H-2

ACTION OR EFFECT TO BE MEASURED:

Emerging issues.

VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:

Issues surfaced that were not included in or analyzed for effect by the Forest Plan.



**Purpose:** This monitoring item was established to track the amount of resource management conflict that is occurring, especially those conflicts which were not foreseen during the preparation of the Forest Plan. The Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both moderate.

**Background:** New emerging issues could affect the Forest's ability to implement the Plan as intended, so they are identified as part of monitoring.

### EMERGING OR POTENTIAL FOREST ISSUES NOT SPECIFICALLY EVALUATED IN THE FOREST PLAN:

#### **Roads and Associated Access Issues:**

*Road Maintenance:* The inability to maintain existing roads to an acceptable standard continues to be a major concern both internally and with the public. There is a conflicting need to improve watershed conditions with the need to maintain public access.

*Road Closures:* Road closures in general have become part of the public's concern over federal vs local control.

*Access:* Public comments include concerns about access to the forest for a variety of reasons, including snowmobile or OHV use in Designated and Recommended Wilderness areas. There is a conflicting need to provide back-country winter access with the need to maintain habitat security for lynx and other species. The Forest Plan allows snowmobiling in the Ten Lakes WSA, however, opponents interpret it as authorization at the level of use at the time the Plan was approved. Use in the Ten Lakes WSA has increased significantly since 1987 including non-typical use by llama and mountain bikers. There is also a conflicting need to provide access to private lands (ANILCA) with a need to maintain habitat security, especially for grizzly bear.

**Timber Harvest Concerns:** Declining level of timber harvest will impact area mills and loggers, county budgets and general economic development. Mill closures are affecting the small sales program on the Forest, numbers of bidders and reduced stumpage. The fires of 2000 have elevated local concern for reducing the level of natural fuels on Forest Service lands. While the Forest is looking at different vegetation treatment options, there continues to be opposition to timber harvest by environmental groups.

**Land Uses:** There is an increasing demand for use of National Forest System lands. This is putting stress on conflicting resource values and the ability of the Agency to address them in a timely manner. One area where this is becoming very apparent is on the Kootenai River and the Forest Service's role in providing/improving access to the river. As electrical rates increase, there is local interest in using wood waste as fuel for power generation. There will also be an increased demand for small hydro-power opportunities.

**Community Relations:** There is public perception that the Forest Service is not fulfilling its responsibility as a partner in rural community development. This issue is also related to the decline in timber harvest and road closures. The regional/national initiatives related to roadless areas, planning regulations and transportation management are a source of local frustration. Local people feel left out of the process.

#### **CONTINUING FOREST ISSUES THAT MAY STILL AFFECT THE FOREST PLAN:**

The Forest Plan initially identified and addressed 13 public issues. As stated in the FY92 Monitoring Report, of these original 13 issues, the following are still current issues: grizzly bear management, timber supply (local economic impact), road management and public access, potential mineral development, visual (scenic) quality, and community stability (in the broader sense of using the natural resources of National Forest lands to provide jobs related to recreation, tourism, and forest products other than timber).

**Recommended Actions:** These emerging issues and those identified in previous reports will be reviewed during Forest Plan revision to determine if and how they should be resolved. Collaboration with the public will be an important aspect of the new revision process.

## HUMAN & COMMUNITY DEVELOPMENT: Forest Plan Costs; Monitoring Item H-3

ACTION OR EFFECT TO BE MEASURED:	Determine if the costs of producing outputs that were used in the Forest Plan continue to be valid.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	A deviation of more than 10 percent from the cost data used to calculate present net value in the Forest Plan.



**Purpose:** This monitoring item was established to track the cost of major items contributing to the present net value of the Forest Plan. The Plan requires that this item be reported annually. The expected accuracy and reliability of the information are moderate to high.

**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 that 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 (different breakdowns) now in use. As a result, only some of the variable costs can be readily used to determine changes in unit costs. However, the ones used are the variable cost items that influenced land allocation and activity scheduling in the Plan and indicate trends in unit cost change for monitoring purposes.

Cost analysis was undertaken for timber sale preparation and administration (site preparation, reforestation, precommercial thinning) and roads constructed primarily for timber harvest. The base line unit cost figures (those used to calculate Present Net Value in the Plan) were extracted from the planning record and inflated to 2000 dollars in order to provide comparability. The fiscal year unit cost values were obtained from Forest accounting reports and Forest management attainment reports. 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. Road costs are based on purchaser credit established and associated engineering support costs. In FY99, changes were made to the Forest Service accounting system and it is no longer possible to separate timber road costs from all other road costs. For this report, total road construction and reconstruction support costs were used, resulting in an over-estimate of unit costs. Reforestation costs include all reforestation-related costs including cooperative work required by timber sale contractors. All acres with reforestation work are represented in the output level. Table H-3-1 shows the base line, the average inflation-adjusted costs for FY88-00, and FY00 unit cost data for these items.

### Results and Evaluation:

**Timber Sales unit costs** for FY00 decreased from the average in the preceding years. However, costs are more than two times greater than projected, which is well outside the +/- 10 percent range

prescribed in the Plan. This increase is due to the increasing complexity in timber sale preparation, along with a concurrent decrease in the amount of timber volume being sold. For more detail on these aspects, please refer to Monitoring Items E-1 through E-3.

**Timber Roads unit costs** were \$20 per MBF in FY00, which is a decrease from the average of the preceding years. The FY00 cost is actually lower than the cost predicted in the Forest Plan. The reduction in unit costs is reflective of a reduced amount of road construction and reconstruction. Monitoring has shown that this value varies from year to year as a result of changing harvest and road construction emphasis.

**Reforestation unit costs** were much higher than preceding years, and approximately 60 percent higher than the projected Forest Plan amount. As discussed in preceding monitoring reports, since reforestation is a relatively large component of the timber program, this additional cost is a significant change in the economic efficiency levels of the Forest.

**Precommercial thinning unit costs** continues to stay well below projected costs, helping the Forest to minimize overall costs. However, in terms of the total PNV of the Plan, precommercial thinning accounts for only 0.2 percent of the total contribution to PNV costs, so the overall economic efficiency is only slightly affected.

**Recommended Actions:** Since timber sale and reforestation unit costs are significantly higher than projected levels in timber sales and reforestation, there will be a need to factor in such changes during Forest Plan revision. Changes to the accounting system have made unit costs for timber roads more difficult to track in the future. During the revision process, cost efficiency analysis will include these elements and others as appropriate.

Table H-3-1 **Forest Plan Unit Costs by Fiscal Year\***

<b>Cost Item</b>	<b>Units</b>	<b>Unit Costs Projected in Plan</b>	<b>Weighted Average FY 88-00</b>	<b>FY 2000</b>
<b>Timber Sales</b>	\$/MBF	31	99	84
<b>Timber Roads</b>	\$/MBF	32	41	29
<b>Reforestation</b>	\$/acre	365	460	601
<b>Precommercial Thinning</b>	\$/acre	327	246	252

\* All unit costs in this table have been updated to 2000 dollars to account for inflation and provide for comparison.

## HUMAN & COMMUNITY DEVELOPMENT: Forest Plan Budget: Monitoring Item H-4

ACTION OR EFFECT TO BE MEASURED:	Assess Forest budget levels and their effects on Forest Plan implementation
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION	10 percent deviation by funding item from the predicted levels in the Forest Plan.



**Purpose:** This monitoring item was established to track the budget levels received from Congress. The Forest Plan requires that this item be reported annually. The expected accuracy and reliability of the information are both high.

**Background:** The budget process is directly related to the Plan, but also influenced by other factors. 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 single year should be interpreted with care. However, given major trends now seen since 1988, it is apparent that many programs and costs have changed substantially, and Plan predictions are no longer fully valid. The analysis presented below will be helpful in budget analysis for Forest Plan revision.

**Results:** Table H-4-1 shows the percentage difference between the planned and actual budgets for FY00. Major increases have occurred in fire, fuels, range, law enforcement, timber salvage sales, tree improvement, and trail and recreation facility construction.

**Evaluation:** In order to evaluate this information with its wide variations, the major Forest programs were grouped for easier comparison. For each major Forest program (such as timber, wildlife, recreation) all applicable budget items shown in Table H-4-1 were grouped and added together. Output levels for each major resource area were obtained from Appendix A (at the end of this report) and are based on the Forest's Management Attainment Report for FY00. For each major program area, all applicable outputs were added together. To some extent, some misrepresentation was introduced by this addition (for instance, developed recreation and dispersed recreation) but overall results do show the major trends. Budget and output data were averaged over the last 13 years to smooth out year-to-year variations. Table H-4-2, on a following page, shows the results of this analysis. Below is a brief listing of each program area, the outputs contributing to it, and an evaluation of the trend.

**Minerals (number of cases handled):** The number of minerals cases is not a controllable item, because the Forest is required to respond to cases as they arise. Although a considerable number of cases have been completed, many of them have been less complicated than the expected long-term average.

**Protection (natural fuels treatment, in acres):** Continuing the trend which began in FYs 92 and 93, the acres of natural fuels treatments went up substantially over prior years (see Appendix A). As a result, the level of accomplishment is continuing high, at 297 percent of the planned amount.

Table H-4-1 **FY00 Budget as a Percent of Forest Plan Projected Amount**

Item	Budget Activity	Planned Amount Base Year 1978	Planned Amount Base Year 2000	FY 2000 Actual Amount	FY 2000 Actual % of 1999 Planned Base
00	General Administration	1,465	3,407	811	24%
01	Fire	530	1,233	1,962	159%
02	Fuels	59	137	577	421%
03-05	Timber	2,648	6,158	1,713	28%
06-07	Range	59	137	205	149%
08	Minerals	287	667	346	52%
09	Recreation	561	1,305	964	74%
10	Wildlife and Fish	648	1,507	453	30%
11	Soil, Air, Water	269	626	286	46%
12	Facility Maintenance	145	337	246	73%
13-15	Lands/ Land Management	156	363	348	96%
42-43	Lands-Status/ Acquisition	96	223	32	14%
16	Landline Location	285	663	217	33%
17	Road Maintenance	764	1,777	1,317	74%
18	Trail Maintenance	115	267	206	77%
19	Co-op Law Enforcement	12	28	92	330%
20	Reforestation (appropriated)	871	2,026	604	30%
21	TSI (appropriated)	562	1,307	630	48%
23	Tree Improvement	20	47	82	176%
26-28	KV (Trust Fund)	1,427	3,319	1,911	58%
29	CFWS - Other (Trust Fund)	348	809	828	102%
30	Timber Salv Sales Perm Fund	275	640	4,104	642%
31	Brush Disposal (Perm Fund)	694	1,614	583	36%
32	Range Improvement	6	14	5	36%
33	Recreation Construction	99	230	448	195%
34	Facility Construction: FA&O	111	258	0	0%
35	Engineering Const. Support	2,360	5,488	354	6%
36	Const. Capital Invest Roads	1,801	4,188	840	20%
37	Trail Const/ Reconstruction	32	74	131	176%
24/ 38	Timber Road Const.: PC/Elect.	2,399	5,579	604	11%

Table H-4-2 **Forest Plan Budget & Output (Averages for FY88 – FY00)**

<b>Activity or Output</b>	<b>Actual Budget as a Percent of Forest Plan</b>	<b>Actual Output as a Percent of Forest Plan</b>
Minerals	62	63
Protection, Natural Fuels Treatment	167	297
Range	116	85
Recreation	71	158
Reforestation	94	74
Timber	51	47
Timber Stand Improvement	73	84
Wildlife	49	50

**Range (permitted grazing use):** The range budget has averaged 16% above Forest Plan projections while production amounts are below those shown in the Plan. See Item D-1 for more information.

**Recreation (Total of developed and dispersed use, in recreation visitor days):** Compared to the Plan, recreation budgets are lower and outputs are higher. Continuing difficulty in obtaining full funding on a national basis affects this program area. Outputs, however, are steadily increasing as more people volunteer and challenge grants help reduce this gap between planned and realized funding. Recreation experience quality could diminish if the current cooperation diminishes and the budget gap continues. The low reliability and accuracy of the dispersed recreation use data (using traffic counts to calculate driving for pleasure and viewing values, for example) may also be a contributing factor to the large overrun of outputs.

**Reforestation (Acres reforested naturally and artificially, by Forest and cooperators):** Reforestation budgets have been close to those projected in the Plan while outputs are at a reduced level. See Monitoring Item H-3 for a discussion of reforestation unit costs.

**Timber (Total volume sold, MMBF):** Both timber budgets and outputs are less than planned. See Monitoring Item H-3 for a discussion of timber unit costs and Monitoring Item E-1 for timber sell volume information.

**Timber Stand Improvement (Acres precommercially thinned):** Actual costs for precommercial thinning have been less than those anticipated. Acreage thinned has not fully reached expected levels due to budget limits.

**Wildlife and Fish (Total acres of wildlife, fish, and T & E habitat improvement):** Budgets in this area average around 49 percent of planned amounts. Accomplishment also remains lower than expected at about 50 percent. These budgets show a decline beginning in FY93 and continuing through FY00. Much of this decrease in the wildlife budget was due to a change in the accounting system. This change in the accounting system and the subsequent reduction in fish and wildlife funds reduces the ability of the Forest to undertake habitat improvement work.

**Conclusion:** Based on the information stated above, this monitoring item is outside the range prescribed in the Plan.

**Recommended Actions:** Continue monitoring.

## Appendix A: Planned Output or Activities and Accomplishments

Actual Accomplishments						
Target Item	Output or Activity	Unit of Measure	Planned Units	FY 2000	FY88-00 Average	FY88-00 Ave. % of Planned Units
Recreation	Developed Use	M RVD	297.0	299.0	275.2	93%
	Dispersed Use: Wilderness	M RVD	18.0	11.0	23.3	129%
	Non-Wilderness	M RVD	559.0	801.0	1,080.2	193%
Wildlife and Fish	Wildlife Habitat Improvement	Acres	5,600.0	1,083.0	2,689.5	48%
	T & E Habitat Improvement	Acres	150.0	450.0	143.2	95%
	Fish Habitat Improvement	Acres	120.0	48.0	117.2	98%
Range	Authorized Grazing Use <sup>2</sup>	M AUM	12.6	9.0	10.7	85%
Soil	Soil Inventory	M Acres	15.7	0.0	4.6	29%
Lands	Land Exchange	Acres	1,700.0	2,745.0	2,012.0	118%
Minerals	Minerals Management	Cases	300.0	155.0	188.2	63%
Protection	Fuels Treatment, Natural	Acres	800.0	5,241.0	2,378.1	297%
Timber	Total Volume Offered	MMBF	233.0	49.4	108.7	47%
	Reforestation (appropriated)	M Acres	3.0	1.4	2.9	97%
	Reforestation (KV)	M Acres	7.1	2.0	6.0	84%
	Reforestation (Other, Co-op)	M Acres	4.0	0.0	1.6	39%
	Total Reforestation	M Acres	14.1	3.3	10.4	74%
	Timber Stand Improv (appropriated)	M Acres	4.0	2.8	3.3	83%
	Timber Stand Improv (KV)	M Acres	1.0	0.1	0.9	87%
	Total Timber Stand Improv	M Acres	5.0	2.9	4.2	84%
	Stand Examination	M Acres	139.0	29.2	127.4	92%
	Fuel Treatment (BD/ KV)	M Acres	11.7	2.9	7.9	67%
Facilities	Total Road Construction	Miles	237.0	0.0	43.7	18%
	Trail Construct/ Reconstruct	Miles	7.5	10.7	10.9	146%

<sup>2</sup> Authorized grazing use is the amount of grazing that is billed for a season. Permitted use is the amount on the grazing permit and may be higher than the authorized amount, due to fluctuations in herd size, change in weather, etc.

## Appendix B – Project-Specific Amendments

<b>FY</b>	<b>District</b>	<b>Date Signed</b>	<b>Decision Name</b>	<b>Standard Amended</b>	<b>Description</b>	<b>Years in Effect</b>
99	Rexford	1/23/98	Parsnip Lodgepole Pine Salvage Timber Sale	MA 16 FS#4	Suspend requirement that existing cutting units will not be enlarged until they are certified as regenerated and recovered	10-15 yrs
	Three Rivers	03/15/99	Pine Timber Sale	MA10 WS #3	Suspend snag requirements	
	Libby	03/11/99	Deer Marl Salvage Timber Sale	MA 12 TS #2	Removal of hiding cover	10-15 yrs
	Rexford	06/16/99	Pinkham Timber Sale	MA 12 TS #2, WS #7	Harvest within movement corridors adjacent to unrecovered openings	10-15 yrs
	Three Rivers	06/18/99	Clay Beaver Timber Sale	MA 12 TS#2, WS #7	Harvest within movement corridors adjacent to unrecovered openings	10-15 yrs
	Libby	06/23/99	Dry Pocks Timber Sale	MA 12 FS#3	Comp 579, existing ORD 0, during project 1.0, after 0	3 yrs
00	Libby	06/16/00	Syrup Salvage	MA 12 FS#3	Comp 579, existing ORD .34, during 2.1, after .34	3 yrs
	Libby	06/22/00	McSwede Timber Sale	MA 16, MA 11	Short term reduction in VQO	20-25 yrs
	Libby	10/00	Alexander Timber Sale	MA 10 WS #3	Suspend snag requirements	

## APPENDIX C: List of Preparers

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