United States
Department of
Agriculture

Forest Service

Beaverhead-
Deerlodge
National Forest

FOREST PLAN MONITORING AND EVALUATION REPORT

Fiscal Year 2004

Cover Photo: Antone Cabin, Kevin Suzuki, 2004

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Beaverhead-Deerlodge National Forest

Forest Plan Monitoring & Evaluation Report Fiscal Year 2004

Introduction

This eighteenth annual Monitoring and Evaluation Report provides an account of management activities on the Beaverhead-Deerlodge National Forest (BDNF) for Fiscal Year 2004 (October 2003 through September 2004). Monitoring and evaluation are the primary tools the Beaverhead-Deerlodge National Forest uses to assess whether we are accomplishing the goals and objectives set forth in the Forest Plans. The results provide Forest line officers and employees, Regional and Washington offices, Congress, and the public with information on the progress and results of implementing the Beaverhead-Deerlodge Forest Plan.

More specifically, evaluation of data gathered during monitoring is designed to lead decision makers to further action, including:

- continuing the management practice,
- referring the problem to the appropriate line officer for improvement of the application of the management practice,
- modifying the management practice as part of a Forest Plan amendment,
- revising the schedule of outputs,
- revising the cost/unit output; or
- initiating revision of the Forest Plan.

Over the 18 years since these Forest Plans were implemented, evaluation of data has been leading us closer to initiating Forest Plan revision. This Forest began the process of revising the two Plans and consolidating them into one Plan in 2002. An important step preparing for Revision was to review the findings from a dozen previous Forest Monitoring and Evaluation Reports along with other information to determine which parts of the plan are in the greatest need of revision. We know much of our current Plans direction (goals, objectives, outputs and costs) and the related monitoring items will be changing soon with the revised Plan. This year's monitoring effort recognizes that fact. Evaluation of many items refers to more detailed discussions provided in our Analysis of the Management Situation (2002).

Monitoring information for the Beaverhead-Deerlodge Forest is presented in two separate reports because we still follow two separate Forest Plans until the Plan Revision is complete. At that point, late in 2006, we will have a single Forest Plan for the BDNF. Monitoring requirements are unique (though sometimes overlapping) for each Forest. The Beaverhead Report is presented first, then the Deerlodge. A separate Table of Contents and Summary of the monitoring items by Forest is presented at the beginning of each Forest Report. See the individual monitoring item write-ups for detailed discussions.

We have tried to include additional information that will be pertinent with a revised Plan; new data on wolverine, amphibians, and road obliteration, for example. A narrative summary of these monitoring and inventory highlights is provided immediately below since many of these do not relate to standard monitoring items.

Monitoring and Evaluation Highlights for FY04

Wolverine and Lynx Studies– The Rocky Mountain Research Station (RMRS) and Wildlife Conservation Society (WCS) are conducting independent research in cooperation with the BDNF. The RMRS studied the presence of and travel patterns of wolverine and lynx in the Pioneer and adjacent mountain ranges. The Final Report (December 31, 2003) was distributed in 2004. The authors conclude that lynx are either absent or exceedingly rare in the Pioneer Mountains and adjacent ranges. Wolverines were present in all 3 ranges studied as small populations that may include only a few individuals. Wolverines cross the Scenic Byway in winter when the unplowed road is a major snowmobile trail. Individual animals were not reluctant to cross the Byway. The Scenic Byway and Highway 43 do not appear to impair wolverine movements. Recreational trapping was the primary mortality factor for this population of wolverine.

The WCS (Bob and Chris Inman, Project Leaders) is studying the presence of wolverine and winter recreation patterns affecting wolverine in the Greater Yellowstone area. Their Madison Study Area includes the Madison, Gravelly, and Centennial Mountain Ranges on the BDNF. Preliminary results will be published in September 2005.

Amphibian Distribution Studies – Bryce Maxell, University of Montana, completed an inventory of amphibian and aquatic reptiles on and around the Beaverhead-Deerlodge National Forest during 2001-2003. He submitted a report in 2004 to the six Cooperators in that effort, including the Beaverhead-Deerlodge National Forest. All standing water bodies (lentic sites) in 78 of 686 randomly selected watersheds across western Montana were inventoried. Patterns of detection/non-detection and relative abundance of amphibians and aquatic reptiles were correlated with landscape level characteristics. In addition, twelve additional watersheds were surveyed to evaluate the potential impacts of fish stocking and to develop rapid bio-assessment procedures for amphibians and aquatic reptiles.

Eight amphibian and 8 reptile species have been definitively documented on and around the BDNF. Three of these amphibian species and 1 of these reptile species are listed as Montana State Species of Concern by the Montana Heritage Program and Montana Department of Fish, Wildlife and Parks. Although undetected to date, 3 additional amphibian species and 5 additional reptile species are potentially present in this region as well. The status of all of these species is summarized in the following Table. As a result of these 3 years of surveys and the gathering of observation and museum voucher records, confidence intervals were able to be calculated for watershed and site occupancy and breeding rates for 7 of these species. In addition, geographic distribution maps, elevation distributions, and graphic displays of the percent of lentic sites surveyed with reproduction in each watershed surveyed were produced. Geographic distribution maps were also made for the other 9 herpetofauna species documented in the area. The surveys summarized in this report have greatly increased our understanding of the distribution and status of amphibians and reptiles on the BDNF.

Table 1 **Watershed and Site Occupancy and Breeding Rates for Inventoried Species for which confidence intervals can be calculated**

SPECIES	DETECTED IN WATERSHED (Y/N)	BREEDING IN WATERSHED (Y/N)	NUMBER AND PERCENT OF LENTIC* SITES DETECTED	NUMBER AND PERCENT OF LENTIC* SITES BREEDING
Long-toed Salamander	23 (68%)	23 (68%)	88 (19%)	87 (19%)
Tiger Salamander	6 (38%)	6 (38%)	40 (21%)	40 (21%)
Western Toad[1]	24 (37%)	18 (26%)	61 (7%)	29 (4%)
Boreal Chorus Frog	10 (53%)	10 (53%)	41 (13%)	35 (11%)
Columbia Spotted Frog	55 (81%)	48 (71%)	510 (58%)	284 (32%)
Terrestrial Gartersnake	30 (44%)	-	60 (6.8%)	-
Common Gartersnake	7 (10%)	-	7 (0.8%)	-

Other species definitively documented in the area for which only qualitative and subjective assessments of status can be made include: Rocky Mountain Tailed Frog, Plains Spadefoot (Montana State species of concern), Northern Leopard Frog (Montana State species of concern), Painted Turtle, Greater Short-horned Lizard (rare), Rubber Boa, Eastern Racer, and Western Rattlesnake.

Sage-Grouse Habitat Studies– In 2004, Montana State University completed year two of a Challenge Cost-Share project studying sage-grouse populations and habitat in southwest Beaverhead County, Montana. Researchers trapped and radio-marked birds, conducting vegetation surveys of actual use sites. Data analysis won't be competed until 2005 with a final report in 2006.

Westslope cutthroat trout genetics and distribution – Between 2001 and 2004, the Beaverhead-Deerlodge National Forest intensively surveyed potential westslope cutthroat trout (WCT) streams, gathering population data, habitat data, and sampling genetics in order to develop subbasin plans for conserving and restoring the species.

[1] Listed as a Sensitive Species on Forests in western Montana by the USFS and a Montana State Species of Concern

Over the course of the WCT sub-basin inventories, we completed habitat surveys on 448 habitat reaches in 158 streams, totaling 356 miles of surveys. We surveyed fish populations in 359 streams (through electrofishing) providing representative data over about 724 stream miles. Electrofishing was completed on 1412 reaches, which if laid end to end would run for a total length of 144 miles. We identified 27 populations that had not previously been identified or documented. Over the entire area, we collected samples for genetic analysis from 2100 cutthroat trout.

Subbasin plans for conserving and restoring WCT are being developed from this data in the Big Hole, Beaverhead, Red Rock, Ruby, Madison and Jefferson subbasins.

Stream Channel Recovery- In 2004, permanent reference sites were re-measured on seven stream reaches to determine if allowable use levels were effective in protecting streams from livestock grazing. Sites were selected where allowable use levels had been consistently implemented over a sufficiently long period of time and measurement sites had been established prior to implementation of these standards. The study showed that consistent compliance combined with conscientious management by the operator, led to significant stream recovery.

Roads Analysis - Roads analysis was initially introduced in 1999 as a means of providing Forest Service decision makers with critical information for developing road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions. The National Forest System Road Management rule (2001) formalized the roads analysis process, and included a requirement that all National Forests conduct Forest-scale roads analyses.

The Beaverhead-Deerlodge National Forest completed a Forest-wide Roads Analysis in 2004. The purpose of this analysis was to assess broad-scale issues related to road management on the Forest, including: environmental, social, and economic issues, right-of-way needs, and interrelationships with other agencies. We evaluated and ranked all arterials and collectors (regardless of maintenance level) and a selected set of the objective maintenance level 3, 4, 5 locals (i.e., roads maintained for passenger car use) that were considered the “backbone” of the road system.

The roads analysis report documents the information and analyses used to identify opportunities and set priorities for the future National Forest road system. The report includes maps and tables which display the Forest road system, risks and opportunities identified for each analyzed road, as well as management priorities and other information relevant to the analysis. This report is not a decision document.

Key Findings :

Our existing arterial and collector roads are an important component of the Forest’s “minimum necessary road system”. None of the arterial and collector roads analyzed were recommended for decommissioning or conversion to trails.

Some of our existing objective maintenance level 3, 4, and 5 roads are no longer needed for passenger car use and should be managed as maintenance level 2 roads (maintained for high clearance vehicles).

Budget allocations for road maintenance are far less than actual needs.

The Forest still has outstanding exterior access needs.

There are remaining interior access needs. Legal rights-of-way are still needed across some private inholdings.

The Forest needs to verify and/or pursue jurisdiction changes where appropriate.

Emphasis has shifted from new road construction to reconstruction and decommissioning. With the change in management emphasize away from commodity production, very little system road construction is occurring on the Forest. When new roads are required, most are constructed as temporary roads.

The Forest needs to continue with watershed- and project-scale roads analysis to evaluate the roads not included in the Forest-scale analysis. Approximately 60 percent of the Forest road system was not evaluated in this analysis, including: many objective maintenance level 3, 4, and 5 locals, all objective maintenance level 2 locals, all objective maintenance level 1 roads, and all unclassified roads.

Road Obliteration – As the Roads Analysis and response to Monitoring Item 8-1 (Road Construction) make clear, the Forest Service has shifted over the last decade and a half from a program of new road construction to reconstruction and decommissioning. While no monitoring is required of decommissioning efforts, we felt it would be of interest to the public and our managers to track those accomplishments.

The BDNF program includes four categories of road obliteration and decommissioning:

- System roads, either classified or unclassified, that are no longer required or are creating other resource problems
- Temporary or system roads obliterated for watershed restoration or wildlife habitat improvement
- Temporary roads constructed by timber purchasers and obliterated prior to sale closure.
- Temporary roads left open to meet other management objectives (provide access for personal use firewood) and closed later, paid for by KV or other programs.

Table 2 lists the miles of road obliteration completed in FY2004. This does not include obliteration of temporary roads constructed as part of a timber sale contract. These roads are obliterated before the purchaser’s contract can be closed.

Table 2 - **Roads obliterated or decommissioned in FY 2004**

TYPE OF PROJECT	MILES CLOSED
System roads decommissioned	.9 miles
Unclassified road obliteration	9.5 miles
TOTAL	10.4 miles

Beaverhead Forest Plan Monitoring Items

Summary

Monitoring Item, Title:

Observation

1-1, Elk Population Trend:

Elk population trends are notably upward.

1-2, Elk Winter Range:

No carrying capacity issues identified for BDNF winter ranges by Montana Fish, Wildlife & Parks.

1-3, Big Game Population Trend:

Big game population trends are stable to increasing Forest-wide.

1-4, Big Game Winter Range:

No identified winter range condition issues on the Forest.

1-5, Habitat Improvement:

Annual targets were met within budget constraints**.**

1-6, Sage-grouse:

No known leks on BDNF ownership per FWP data.

1-7, Trumpeter Swan:

No change in Forest nesting. No known nest on Forest ownership.

1-8, T&E Species:

Peregrine Falcon is no longer listed. The Canada Lynx has been listed for the Forest.

1-9, Cavity Nesting Habitat:

Snags do not appear to be limiting.

1-10, Habitat Effectiveness:

As indicated by increasing elk populations, habitat effectiveness does not appear to be an issue for the Forest. See items 1-1, 1-3.

1-11, Diversity of Plant Communities:

Old growth habitat is well distributed across the Forest.

2-1, Fisheries Habitat Improvements:

Sensitive fish restoration activities on the Forest have resulted in improved populations of grayling and westslope cutthroat trout in selected streams. Improved habitat conditions have been noted where riparian standards have been effectively implemented.

2-2, Indicator Species:

Improved habitat conditions have been noted where riparian standards have been effectively implemented.

2-3, Riparian Habitat:

The results of 10 years of trend data on 9 streams were analyzed. We found significant recovery of streams when livestock grazing complied with Forest standards.

3-1, Sediment Production:

No monitoring was conducted for this item in 2004. Monitoring now focuses on determining status of streams with respect to their riparian function.

3-2, Watershed Standards:

No specific monitoring of timber sales was conducted in 2004. There is very little concern regarding the protection of watersheds as it pertains to timber harvesting. Forest hydrologists are now concentrating watershed standard monitoring in grazing allotments. See monitoring item 2-3.

3-3, BMP Effectiveness:

No specific monitoring of timber sale BMPs was conducted in 2004. Forest specialists are now concentrating on monitoring the effectiveness of grazing standards.

4-1, Soil Displacement/Organic Residue:

Soil quality standards have been implemented at the activity level since 2001 which has placed more emphasis on reducing ground disturbance. In the most recent timber sale activity areas, detrimental soil impacts are generally at or near 15% new impacts on an area basis. Detrimental soil disturbance from compaction in high use grazing areas has been found to be from about 2-8% of the area of the grazing activity area.

5-1, Recreation Use:

Results of recreation use based on a 2000 survey were published in the FY03 Monitoring Report. The survey will be repeated on the Forest in 2005, providing trend data for managers.

5-2, Wilderness Compliance:

A 2004 compliance report for the Anaconda Pintlar Wilderness includes survey data on the self-issued mandatory registration, data on visitor encounters, campsite conditions, etc as outlined in the new 2001 Plan. Data on compliance with Wilderness Management is also entered through the INFRA data system for the Anaconda Pintler and Lee Metcalf Wilderness areas.

5-3, Roadless Acres:

Little or no activity which would change roadless character (timber harvest, road construction, mining, etc) has taken place in roadless areas since 2000. Roadless areas were re-inventoried in 2004. The new inventory will be shared with the public in 2005 with the Draft Forest Plan EIS for comment.

5-4, Facility Access:

All new or reconstructed developed sites are designed for disabled persons.

5-6, Historic Preservation:

All projects were in compliance with Section 106 during 2004.

6-1, Forage Utilization:

Total actual use by livestock was 121,935 AUMs. Actual use is 64% of the capacity projected in the Forest Plan.

6-2, Range Improvements:

Range construction projects included 14.5 miles of barbed wire fence, 4 miles of electric fence, 38 water developments, 5 miles of pipeline, and 3 cattleguards

6-3, Noxious Weeds:

On combined Beaverhead Deerlodge N.F., 8004 acres of noxious weeds were treated in 2004 under all funding sources including cost share.

6-4, AMP Updates:

AMP schedules on the Beaverhead Unit were driven by the Riparian Lawsuit/Forest Plan Amendment of 1995. For 2001-2003 AMP revisions were on schedule however in the last 2 years we have not met the AMP revision schedule.

6-5, AUM Outputs:

Actual AUMs in 2004 were 121,935 or about 64% of the 1986 plan estimate.

7-1, Timber Sold:

A total of 1.4 MMBF was sold in 2004, of which 0.6 MMBF was live, chargeable volume.

7-2, Timber Harvested:

There were 163 acres harvested with a volume of 2.5 MMBF.

7-4, Silvicultural Treatments:

Timber stand improvement and reforestation were not scheduled in FY04.

7-5, Natural Regeneration:

No stands were targeted for natural regeneration.

7-6, Silvicultural Practices:

Harvest in 2004 was 100% intermediate harvest.

8-1, Roads:

No new permanent (system) roads were constructed; 21.9 miles of existing roads were reconstructed on the Beaverhead-Deerlodge.

8-2, Road Restrictions:

There are approximately 328 miles of National Forest System Roads closed year-round to standard highway vehicles, and 867 miles closed seasonally.

8-3, Trail Management:

The Beaverhead-Deerlodge Forest improved (reconstructed) 21 miles of trail and maintained 560 miles of trail in FY04. These accomplishments exceeded targets.

8-4, Road Management:

Maintenance was accomplished on 391 miles of road.

8-5, Exterior Access:

No exterior access roads were constructed or reconstructed in FY2004.

9-1, Insect and Disease Protection:

Aerial surveys show the Forest has 102,867 acres of insect infestations. These infestations are growing.

10-1, Economic Assumptions:

The actual costs of preparing, offering and selling timber have been notably higher than Forest Plan projected costs since as early as 1988.

10-2, Timber Values:

The Forest received $3.46 per MBF for its combined sawlog, post and pole, and fuelwood sales. We received $188/mbf for timber sale preparation and administration in NFTM and $144/mbf for salvage sales.

10-3, Budgets:

Budget Expenditures in FY 04 were $21,527,000. This is within 4 percent of the Forest Plan projection of $22,502,000 (in FY 04 dollars). The outlook for Forest Service budgets over the next 5 years is for continued declines, or at best, stable budgets.

11-1, Local Economies:

The Beaverhead-Deerlodge National Forest contributed approximately 1,739 jobs and $47 million in labor income to the 8-county area. This amounts to 3.8% of the employment and 4.4% of the areas labor income.

11-2, Adjacent Lands:

Other agencies and private landowners continue to affect BDNF management, particularly in the arenas of threatened or endangered wildlife and species of concern, travel management and fire management.

11-3, Emerging Issues:

Fire management, travel management and roadless management are three key topics that will be re-evaluated during Forest Plan Revision.

12-1, Land Allocations:

The question of whether allocations made in 1987 continue to be appropriate is being reevaluated during the Forest Plan Revision process.

12-8, Forest Data Base:

Major projects include cultural site mapping and data entry, westslope cutthroat trout population and habitat mapping and data entry, and road and trail mapping and data entry.

13-1, Appeals:

Seven different appeals were received on 4 separate projects. No decisions were remanded back to the Deciding Official. Two of the seven appeals were withdrawn by the appellants.

Wildlife

Item 1-1: Elk Population Trend

Activity: How are elk populations responding to the provided NF habitat capacity?

Unit of Measure: Number of elk

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 10% deviation from projected capacity

Monitoring Results: Virtually all State Elk Management Units (EMUs) encompassing the Forest have reached or exceeded State population goals. Montana Fish, Wildlife and Parks (FWP) herd composition, population counts and State Elk Plan (FWP 2004, table 9) indicate the Beaverhead-Deerlodge National Forest is the most heavily hunted area in the State. Elk numbers have increased from projected levels of 12,200 to 18,000 (2001 State monitoring).

Evaluation: Summer and winter elk populations on the Beaverhead NF have increased by about 45% over the projected carrying capacity. This number far exceeds the 10% variation which triggers a change in management. Elk populations, however, are controlled by the FWP. In recognition of the increase in populations, the State has instituted either sex elk harvest in 2004 and 2005 to reduce numbers on almost all elk hunting districts that encompass the Beaverhead-Deerlodge National Forest.

Item 1-2: Elk Winter Forage

Activity: Is there adequate winter forage available to sustain the projected big game (elk) population?

Unit of Measure: acres

Reporting Period: 5 years

Variability which would initiate further evaluation: 10% of Allotment Management Plans (AMPs) do not meet Forest Plan standards for utilization of seasonal range; 10% decline in acres by condition or trend.

Monitoring Results: Of the 132 allotments on the South Zone of the BDNF that were monitored by rangeland specialists in 2004, all met winter range utilization standards ("2004 Forest Plan Compliance Summary for Grazing Allotments on the Beaverhead Ranger Districts"). Following the grazing season, additional monitoring was conducted by an integrated team Forest Resource Specialists who reviewed implementation of allotment utilization standards on five allotments, Mill-Ramshorn, Saginaw, Vipond Park, Norton, and Maiden Creek. These annual

reviews are generally focused on implementation of riparian standards, but implementation of upland and winter range utilization standards are also checked. The team concluded that "the decisions made in the range NEPA documents on the five reviewed allotments are being implemented" and standards are being implemented.

Evaluation: Allotment management is meeting utilization standards for seasonal range and forage is more than adequate for wintering elk. State population data (Elk Plan 2004) as mentioned in item 1-1 do not indicate issues with winter range on the Forest. We did not monitor condition or trend on seasonal range in 2004.

Item 1-3: Big Game Population Trend

Activity: How do populations of moose, deer and bighorn sheep respond to National Forest habitat capacity?

Unit of Measure: Number of animals by species

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 10% deviation from projected capacity.

Monitoring Results: No Forest-wide big game monitoring is conducted by Forest Service personnel so actual habitat capacity is unknown. Instead Forest Service biologists coordinate with Montana Fish, Wildlife and Parks (FWP) objectives. FWP hunting permits (2003 data) indicate for hunting districts that encompass the Forest populations are estimated as follows. There is no breakdown for numbers on Beaverhead-Deerlodge National Forest lands alone:

Moose: stable/ population estimated at 1180

Elk: increasing/ population estimated at 29742

Whitetail Deer: stable/ population estimated at 16209

Mule Deer: stable to slightly increasing / population estimated at 22046

Mountain Goats: stable / population estimated at 1745

Big Horn Sheep: stable / population estimated at 458

Black Bears: stable / population estimated at 3089

Evaluation: Big game populations are very healthy on the Forest and in some instances are exceeding projected capacity. Habitat is not limiting. FWP is instituting either-sex hunter harvest of elk to reduce numbers. Limited either-sex harvest of mule deer is also being instituted for some hunting units to control numbers.

Item 1-4: Big Game Winter Range

Activity: Are winter range conditions being maintained or improved for moose, deer, and big horn sheep?

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 10% decline in acres by condition or trend in five-year period.

Monitoring Results: No Forest-wide monitoring by Forest Service has occurred. Some snowmobile issues have been identified in the Boulder River area on elk range. Moose displacement by snowmobiles has been identified in the West Fork Madison River drainage. Still no major Forest-wide winter range issues have been identified

Evaluation: There are no indications that current winter range conditions have declined more than 10% or are limiting populations of moose, mule deer or bighorn sheep. Forest Plan revision is proposing some additional snowmobile use restrictions heavily based on winter range protection from motorized disturbance.

Item 1-5: Habitat Improvement

Activity: Were scheduled habitat improvement projects accomplished?

Unit of Measure: Acres (and Structures)

Reporting Period: 5 years

Variability which would initiate further evaluation: Less than 90% accomplishment in 5-year period.

Monitoring Results: All habitat improvement targets have been met or exceeded. Projects have included noxious weed eradication (4839 acres), habitat restoration (40 acres) and riparian area fencing (30 miles) to reduce adverse browsing pressure on riparian vegetation.

Evaluation: We have consistently met targets within budget constraints. No further evaluation is required.

Item 1-6: Sage-grouse

Activity: Indicator species for sagebrush dependent species

Unit of Measure: Number of animals

Reporting Period: 5 years

Variability which would initiate further evaluation: More than 10% decline in population in 5-year period.

Monitoring Results: We are involved in several efforts to learn more about sage-grouse on the Forest. A Challenge Cost Share (CCS) project with Montana State University is on-going in Big Sheep Creek basin. Over 25,000 acres of habitat are being inventoried and birds are being trapped and monitored. CCS inventory with National Wildlife Federation in 2004 documented

late summer sage-grouse along the south edge of the Gravelly landscape north of the Fish Creek lek.

Besides the projects with MSU and National Wildlife Federation, we are an active party in the Dillon Sage-grouse Working Group and were active in developing the Statewide Sage-Grouse Management Plan. "Guidelines to Manage Sage-grouse Populations and Their Habitats", Connelly, Schroeder, Sands and Braun, 2000, is being used in allotment plan revisions to meet sage-grouse needs.

Forest specialists have modeled sage-grouse habitat using Connelly (2000) guidelines to determine possible extent of available habitat on the Forest. See the table below for results.

Table 3 - BDNF Forest-Wide Summary of Sage-grouse Habitat Ownership – 18km model

HABITAT	ALL OWNERSHIP ACRES	BDNF ACRES / % OF TOTAL
Nesting	1,900,915	259,290 / **13.6%**
Brood Rearing	298,810	76,460 / **25.6%**
Total	2,190,725	335,750/ **15.3%**

Evaluation: We do not have an accurate count of the number of sage-grouse on BDNF lands so cannot establish a trend over the last 5 years. However, based on the information developed over the last 10 years from FWP breeding survey data and the habitat model described above, we know BDNF lands are not used as leks, nesting areas or wintering grounds. These are the areas critical for population maintenance. Summer dispersal upslope onto the Forest has been documented. Modeled grouse habitat for SW Montana shows the main challenges and opportunities for sage-grouse conservation occur on State, BLM, and private lands.

Item 1-7: Trumpeter Swan

Activity: Indicator species for marshland dependent species

Unit of Measure: Number of active nests

Reporting Period: 5 years

Variability which would initiate further evaluation: More than 10% decline in numbers in 5-year period.

Monitoring Results: There is a single nest site at Conklin Lake on the Madison RD. The lake is an in-holding of private ownership in the SE portion of the Gravelly landscape. This nest area has been consistently active with variable fledging success. Four cygnets were hatched in 2004, none survived. Cause of mortality is unknown.

Evaluation: There is no change in swan nesting on the Forest.

Item 1-8 Threatened and Endangered Species

Activity: Bald eagle, peregrine falcon, gray wolf, grizzly bear

Unit of Measure: Acres of habitat: number of animals

Reporting Period: 5 years

Variability which would initiate further evaluation: Any measure of decline in habitat.

Monitoring Results:

Peregrine Falcon - While peregrine falcon has been de-listed (August 1999), there are still Federal requirements to monitor the species. Peregrine falcons are known to nest on the south half of the Beaverhead-Deerlodge Forest near Hidden Lake in the Gravelly Range and in the nearby Centennial Valley. The seven county cumulative effects area for the plan encompasses 5 active eyries. The Hidden Lakes eyrie is the only known active site on the Forest. A sixth active eyrie is located approximately 18 miles northeast of Hidden Lakes at Coal Canyon on the Gallatin NF and a seventh active eyrie located at Hebgen Dam approximately 15 miles northeast of Hidden Lakes). The Hidden Lakes site has produced as follows:

Table 4 **- SW Montana Eyrie Production (Sumner & Rogers 2003)**

Eyrie	1994-1998 Fledglings	1999 Fledglings	2000 Fledglings	2001 Fledglings	2002 Fledglings	2003 Fledglings
Hidden Lake	3	1	1	failed	1	4

Bald Eagle – 15 nests have been documented on the Forest. All nests are on or near the Madison RD in the Madison River drainage. Nesting appears to be annually consistent along the Madison River drainage. While there are incidental observations of birds on the Wisdom, Wise River, Pintlar, and Madison Districts, the latter encompasses all the known nesting on the Forest.

Gray Wolf – Approximately 6 wolf packs totaling 32 wolves are active on the Forest. Both numbers of packs and numbers of animals have varied due to control efforts on those wolves that have preyed upon livestock. Gray wolves are identified as non-essential/experimental for all but a small portion of the Forest north of I-90. Packs are definitely increasing, particularly west of Dillon with notable wolf activity occurring in the Big Hole.

Grizzly Bear – The Gravelly landscape is now considered occupied by grizzly bears. This encompasses approximately 500,000 acres. The entire landscape is now subject to a special order prescribing food storage and sanitation requirements to minimize human/bear conflicts. Grizzly bears are expanding in the Greater Yellowstone Ecosystem which encompasses portions of the Forest. The Fish & Wildlife Service will soon propose de-listing of the bear.

Canada lynx – This species has been added to the Forest T&E list since being listed under ESA by the US Fish and Wildlife Service. There is no widespread documentation of lynx on the Forest. Lynx habitat mapping has been done for the entire Forest. Updated mapping is being undertaken as part of LRMP revision. Habitat remains fundamentally unchanged from the initial

mapping for the LCAS. Subsequent changes in habitat levels will be due primarily to more accurate mapping.

Evaluation: There has not been any measured decline in habitat for bald eagle, peregrine falcon, gray wolf, grizzly bear or lynx. No further evaluation is required.

Item 1-9: Cavity Nesting Habitat

Activity: Cavity nesting habitat management

Unit of Measure: Number of snags per acre

Reporting Period: 5 years

Variability which would initiate further evaluation: Snag level 10% below Forest Plan standards.

Monitoring Results: FIA monitoring shows widespread distribution of larger snags across the Forest. This snag inventory is considerably above the Beaverhead plan requirements of 1.0 – 2.5 snags per acre at the compartment scale (P.II-29 Beaverhead Plan 1986).

LANDSCAPE:	SNAGS PER ACRE >10"DBH
Pioneer	6.8
Big Hole	8.3
Upper Rock Creek	11.7
Clark Fork - Flints	4.2
Upper Clark Fork	2.1
Boulder River	4.4
Jefferson River	3.7
Tobacco Roots	8.9
Gravelly	8.6
Madison	10.6
Lima Tendoy	4.9

Evaluation: Snag standards are exceeded across the Forest at the landscape scale. FIA is the best statistical inventory tool currently available. FIA does not provide information at the compartment scale identified in the 1986 plan.

Item 1-10: Habitat Effectiveness

Activity: Security Cover/Road Closures

Unit of Measure: Effective cover percentage

Reporting Period: annual

Variability which would initiate further evaluation: Any change in projection below 70% effective cover.

Monitoring Results: Some of our HAUs fall below the 70% elk effective cover standard even before management activities like harvest or roading take place. The Beaverhead-Deerlodge

Analysis of the Management Situation, 2002, identified several problems with the use of elk effective cover analysis as established in the 1986 Forest Plan. Habitat effectiveness was designed as a measure of elk summer range security. State Elk Management Units were not compatible with the scale of management units (Habitat Analysis Units (HAU)) described in the Plan. Alternatives being considered for Forest Plan Revision address more effective and meaningful measures for elk security – they focus largely on road density.

This monitoring item was designed to assure elk security which would lead to elk population stability. As noted in the narrative at item 1.1 all Elk Management Units that encompass portions of the Forest have reached or exceeded State objectives for herd population, hunter numbers, and hunter recreation days. This is with the existing road densities and road management objectives.

The single most important factor in habitat effectiveness is open, motorized roads/trails. The 70% habitat effectiveness (HE) level HE elk equates to slightly less than 1.0 miles/sq mi of open motorized roads/trails. Current road densities appear as follows:

Table 5 - Open Road and Trail Density by Hunting Unit

HUNTING UNIT	BEAVERHEAD-DEERLODGE OPEN ROADS/TRAILS BY FWP HUNTING UNIT DURING FALL HUNTING SEASON		
	Open Road Density	**Open Trail Density**	**Total Open Density**
	Miles / Miles2	**Miles / Miles2**	**Miles / Miles2**
210	0.8	0.1	0.9
211	0.5	0.2	0.6
212	1.3	0.1	1.4
213	1.2	0.5	1.7
214	1.4	0.4	1.8
215	1.4	0.1	1.6
216	0.5	0.2	0.7
300	0.6	0.1	0.6
302	1.0	0.1	1.1
311	0.0	0.0	0.0
318	1.8	0.2	2.0
319	0.6	0.1	0.7
320	0.7	0.1	0.8

321	1.0	0.3	1.3
323	0.4	0.1	0.5
324	0.4	0.0	0.5
327	0.6	0.2	0.8
328	0.7	0.1	0.9
329	0.8	0.1	0.9
330	0.5	0.1	0.7
331	1.2	0.2	1.3
332	0.5	0.3	0.8
333	0.6	0.4	1.0
340	1.1	0.4	1.5
341	0.5	0.0	0.5
350	1.1	0.2	1.3
360	0.0	0.0	0.0
362	0.0	0.0	0.0
370	0.8	0.1	0.9

Eleven of 29 hunting districts exceed 1.0 mi/sq mi of open motorized roads/trails during the fall hunting season. This is the period when elk are subjected to the most disturbances. Four hunting units exceed 1.5 mi/sq mi which equates to approximately 50% HE. This is the minimum HE recommended by Christensen et al (1993) where elk are one of the primary resource considerations.

Evaluation: Some of our Habitat Analysis Units fall below the 70% standard in their natural condition, before any management activity takes place. It was apparent soon after the Plan was signed that further evaluation of this item would be required. Recommendations for improving habitat effectiveness standards were made through the Five Year Review (1992) and the Analysis of the Management Situation (2002) and Alternatives in the Forest Plan Revision DEIS (2005).

However, the intent of this monitoring item is to assure secure habitat for elk which would lead to elk population stability. Using current road density measurements and elk population levels as an indicator, that security is being provided. At the hunting district scale, there is little need for concern about adequate habitat effectiveness based on open motorized roads/trails. As discussed at items 1-1 & 1-3 elk populations are very robust across the Forest.

Item 1-11: Diversity of Plant Communities

Activity: Diversity of plant communities (old growth habitat acres) habitat for old growth dependent species (pine martin, goshawk)

Unit of Measure: Acres

Reporting Period: 5 years by District; 10 years Forest-wide

Variability which would initiate further evaluation: Anything less than Forest Plan standards.

Monitoring Results: The Beaverhead Plan calls for at least 10% spruce and Douglas-fir be maintained in old growth conditions by compartment. FIA data does not provide such information at the compartment scale, but does develop a statistically valid picture at the landscape/Forest scale. The map (Figure 1) on the following page uses definitions found in Green, et al. 1992, applied to FIA subplot data to display estimates of total old growth forest types and the estimated distribution displayed by landscape. The distribution indicates that old growth is present in all landscapes.

Table 6 - Estimates of Forest-wide Old Growth by Cover Type and Associated 90% Confidence Intervals

Cover Type	Lower Bound 90%CI	Point Estimate %	Upper bound 90%CI
Subalpine fir	22.86	30.59	38.6
Whitebark pine	20.57	29.47	38.86
Lodgepole pine	10.94	14.19	17.64
Englemann spruce	25.49	34.4	43.5
Limber pine	0.00	28.0	65.0
Douglas-Fir	15.19	19.81	24.64

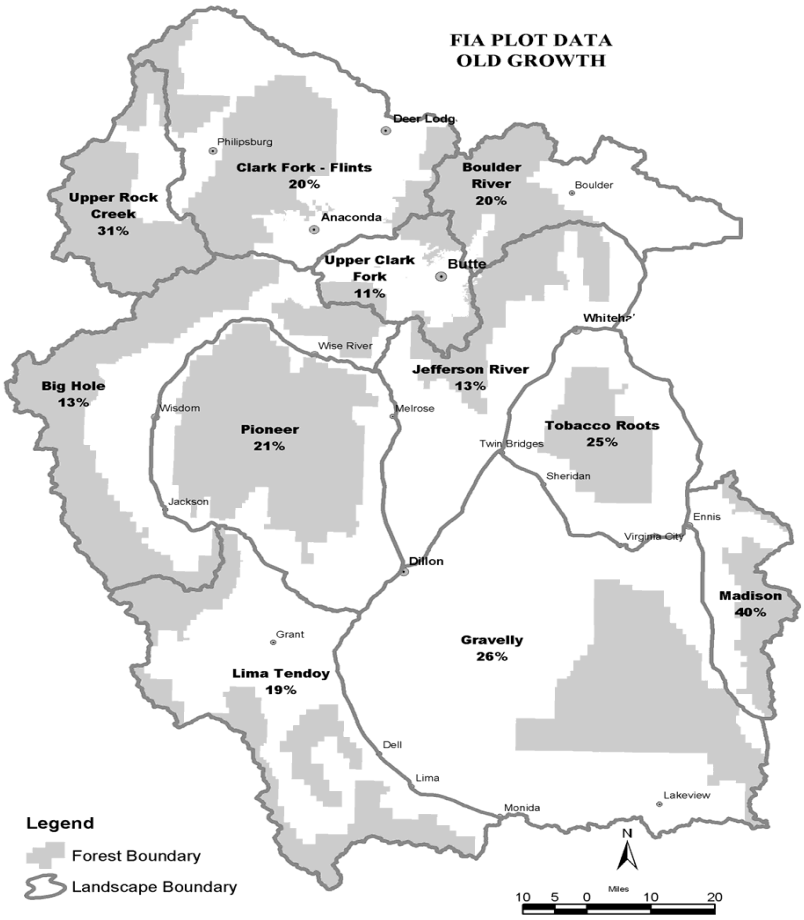

Figure 1

Evaluation: Old growth is well distributed across the Forest and all forest types well above the 10% level at the Forest scale.

Fisheries

Item 2-1: Fisheries Habitat Improvements

Activity: Were scheduled habitat improvement projects determined to be necessary and were they accomplished?

Unit of Measure: Acres, structures

Reporting Period: Annual

Variability which would initiate further evaluation: Less than 90% accomplishment in 5 years.

Monitoring Results: The Forest Plan listed an average annual workload of 5 acres of fish habitat improvement per year. In FY04 fish habitat improvement project accomplishments included 555 acres of habitat restoration, 4 acres of lake restoration and 55 miles of stream restoration.

Evaluation: Fish habitat improvement projects exceeded Forest Plan projections. No further evaluation is needed.

Item 2-2: Indicator Species

Activity: Westslope Cutthroat trout and arctic grayling indicator species

Unit of Measure: Number of fish

Reporting Period: 5 years

Variability which would initiate further evaluation: Measurable declines in populations.

Monitoring Results:

Westslope Cutthroat Trout

Available information suggests westslope cutthroat trout (WCT) have declined substantially in distribution and abundance from historic levels, on the Beaverhead-Deerlodge Forest.

From 2001 - 2004 we intensively inventoried streams to gather WCT population and habitat data and collect samples for genetic analysis in preparation for Subbasin planning. About 359 streams were electrofished across the analysis area, providing data representative of approximately 724 miles of stream.

Describing current WCT distribution is complicated by an abundance of populations with varied levels of genetic purity. The question is, at what point has a hybridized individual/population become sufficiently altered so that it no longer has value from a WCT conservation standpoint? Using specific criteria outlined by Shepard et. al. (2002) in conjunction with the data we gathered allowed us to designate Conservation Populations on the Forest. These are genetically unaltered; or hybridized with ecological attributes of significance. The conservation populations we identified occupy about 1,280 stream miles, representing approximately 14% of historically occupied stream miles within the Forest.

Currently draft Westslope Cutthroat Subbasin plans are done for the Big Hole, Beaverhead, Red Rock, and Madison drainages. The Ruby plan is partially complete and the data summarization is completed for the Boulder.

Table 7 - Distribution of Conservation and Non-Conservation Populations by River Drainage

RIVER DRAINAGE (4TH CODE HYDROLOGIC UNIT)	# OF CONSERVATION POPULATIONS	APPROXIMATE # OF NON-CONSERVATION POPULATIONS
Beaverhead	18	7
Big Hole	48	27
Boulder	6	1
Jefferson	7	2
Madison	9	20
Red Rock	40	22
Rock Creek	8	5
Ruby	16	19
Upper Clark Fork	21	25
TOTAL	173	128

Over 300 WCT populations have been identified in streams in the analysis area. About Fifty-seven percent, of these are being considered for conservation status. Table 7 above displays the distribution across river drainages.

Fluvial Arctic Grayling

Extensive work continues to be done on the Big Hole River fluvial grayling by the Montana Department of Fish, Wildlife and Parks in cooperation with the Beaverhead N.F., U.S. Fish and Wildlife Service, and Montana Natural Heritage Program. Information continued to be collected on recruitment, population dynamics, and habitat requirements of grayling in the Ruby River.

Efforts to reintroduce fluvial arctic grayling in the Ruby River continued in 2004. The river upstream of Ruby Reservoir seems to hold the greatest promise for establishing a self sustaining population outside the Big Hole River. While limited reproduction has occurred, total numbers of grayling remain low. Currently, they are distributed over about 47 miles of stream; 66% of which are on the Forest.

Evaluation:

Westslope cutthroat trout

Declines in westslope cutthroat trout (WCT) are apparent, further evaluation is required. The declines in WCT populations throughout the fish's historic range in the Upper Missouri river basin have been recognized for years. Unfortunately, changes in population densities do not show a statistical correlation with habitat conditions. Management effects must still be considered, but we are not observing a dependable relationship between changes in habitat quality and population declines. The probable over-riding causes of decline are associated with reductions in habitat due to drought and competition by non-native trout.

The BDNF has responded to WCT declines in two ways. We have modified Forest Plan direction by incorporating the Short Term Strategy for Westslope Cutthroat Trout into our Riparian standards since 1998. Stream function and fish habitat have shown improvement with application of the new riparian standards (See item 2-3). We have also intensified inventory and genetic testing couple with development of Subbasin Plans for conservation and restoration.

Fluvial Arctic Grayling

Grayling show no measureable decline on the National Forest portions of the Big Hole. Because grayling were not present in the Ruby River when the Plan was developed, we've had a positive effect. No further evaluation of grayling is required.

Item 2-3: Riparian Habitat

Activity: What are management effects on the functioning of riparian areas?

Unit of Measure: Number of reaches in functioning, functioning-at-risk, and non-functioning categories and their trend.

Reporting Period: 5 years

Variability which would initiate further evaluation: <85% of 50 reaches show an upward trend

Monitoring Results: In 2004, the Forest hydrologist re-measured seven stream reaches to determine if allowable use levels were effective in protecting streams from livestock grazing. The study showed that consistent compliance combined with conscientious management by the operator, led to significant stream recovery. His conclusions, documented in a draft publication state, "(*I)n all, seven streams were evaluated spanning a five to eleven year period in southwest Montana. The data suggests that the implementation of the Allowable Use Level protocol developed on the Beaverhead-Deerlodge National Forest by Bengeyfield and Svoboda (1998) is effective in facilitating stream recovery in the presence of livestock grazing when met consistently. In cases where there was consistent implementation of the Allowable Use Levels, there were notable improvements in stream morphology similar to those published for streams protected by exclosures. The only exception is where trespass livestock occupied a pasture for three weeks and slowed the recovery trajectory or where compliance is less than seventy percent.*

The greatest levels of recovery were seen in streams with the best annual compliance record and in those reaches located in unconfined valleys with higher sinuosity and finer substrate sizes.

The cumulative bankfull width technique proved to be a revealing indicator of the trend in overall channel width along a reach over time. This technique provides a reach level indicator of bankfull widths that is a useful companion to the traditional information collected at individual cross sections. The cumulative bankfull width technique represents bankfull conditions along a reach rather than at a site; thereby averaging out site variability.

Based on this evaluation and several inferences can be made. As more data is collected and summarized on the Beaverhead-Deerlodge National Forest the strength of these conclusions is expected to improve.

1. *The consistent application of Allowable Use Levels (Bengeyfield and Svoboda 1998) appears to be an effective tool to permit livestock use while allowing streams to recover important geomorphic variables.*

2. *When grazing standards are properly applied and complied with, stream morphology can show measurable improvement in 10 years or less if sediment supplies are not limiting.*

3. *The key to successfully implementing the Allowable Use Level procedure (Bengeyfield and Svoboda 1998) is the effectiveness of operators in recognizing when Allowable Use Levels have been met and initiating cattle movement within the pasture before standards have been exceeded.*

4. *Stream recovery may be slowed or reversed when Allowable Use Levels are exceeded even during a single grazing season.*

5. *The amount of stream channel recovery is commensurate with the level of compliance.*

6. *A short coming of this study is the lack of riparian vegetation monitoring. In addition to monitoring the recovery of channel geomorphology, future studies will incorporate a measure of vegetation recovery as well. This information would be useful to show how the riparian plant communities are responding to Allowable Use Levels as well.*"

The following publications display the riparian monitoring data that has been collected over the last several years. These publications are available at the Supervisor's office in Dillon.

Bohn, B.A. Stream channel recovery following implementation of allowable livestock use levels on the Beaverhead-Deerlodge National Forest. Submitted for publication in July 2005.

Bengeyfield, P. The effectiveness of allowable use levels in recovering streams affected by livestock. (In press).

Evaluation: Eighty six percent or six of the seven streams reported on in detail showed upward trends. Upward trends resulted on each stream where riparian standards were successfully implemented. In addition, compliance with riparian standards was achieved on 87% or 132 of the 153 allotments monitored on the Beaverhead (South Zone) Ranger Districts (2004 Forest Plan Compliance Summary for Grazing Allotments).

Watershed

Item 3-1: Sediment Production

Activity: What are the impacts of management activities on sediment production?

Unit of Measure: Tons per year

Reporting Period: Annual

Variability which would initiate further evaluation: Any increase that is in violation of Forest Plan Standards.

Monitoring Results: Operation of eight monitoring stations was discontinued after the 1993 season since the objectives of the monitoring effort were met. The data from the eight monitoring stations will be used in conjunction with data from other national forests on the east side of Region 1 to adjust coefficients in the WATSED model or to develop a correlation between sediment in the water column and sediment in spawning gravels. All data are on file at the Forest Supervisor's office in Dillon.

Evaluation: The purpose of this monitoring item has already been accomplished. All data are on file at the Forest Supervisor's Office in Dillon. Monitoring efforts now focus on determining the status of streams with respect to their function. See Monitoring Item 2-3, Riparian.

Item 3-2: Watershed Standards

Activity: How accurate are assumptions that scheduled harvest can meet watershed standards?

Unit of Measure: Acres of timber harvest scheduled

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 15% change in the amount that can be scheduled within Plan standards vs. planned timber harvest acres.

Monitoring Results: In 2004, no specific monitoring was conducted on any timber sales. The acres of timber harvest have dropped dramatically since the implementation of this plan. There is currently very little concern regarding whether timber harvest can occur and meet watershed standards.

Evaluation: The acres of timber harvest have dropped far below the 15% variation from Forest Plan projections described for this monitoring item. Faulty assumptions about how well scheduled harvest can meet watershed standards are but a small piece of this shortfall. Public pressure and new agreements (Short Term Strategy for WCT) have driven projects designed to generate no increase in sediment – which is much more stringent a criteria than Plan standards. A number of other issues (old growth, clearcutting, species viability, declining budgets) have also driven reductions. See more discussion about this monitoring item in the Analysis of the Management Situation, 2002.

Item 3-3: BMP Effectiveness

Activity: Are "Best Management Practices" (BMPs) effective?

Unit of Measure: projects

Reporting Period: Annual

Variability which would initiate further evaluation: Application of Best Management Practices (BMPs) found inadequate or ineffective.

Monitoring Results: Implementation monitoring for BMP's was not conducted on the Forest in 2004. However, monitoring efforts are refocused on evaluating the effectiveness of grazing BMP's (see monitoring item 2-3). On the Beaverhead (South Zone) Ranger Districts, 153 or 167 grazing allotments were monitored through the 2004 grazing season. Of those, 87% meet standards for uplands, winter range and riparian zones. In addition, an Interdisciplinary Range Review Team inspected 5 allotments, Mill-Ramshorn, Saginaw, Vipond Park, Norton, and Maiden Creek. In general it appears that the decisions made in the range NEPA documents on the five reviewed allotments are being implemented. In spite of the extended drought, the summary compliance table indicates that 73% of the sites inspected met standards. Lack of adequate moisture to recharge ground water continues to pose problems on much of the Forest due to the fact that many spring sources are weakening or drying up. This tends to complicate management in many cases as grazing systems may not work as originally designed, and distribution into the uplands becomes more difficult.

Evaluation: There have been no indications that BMP's are inadequate or ineffective. Range riparian grazing standards are proving effective where implemented (See Item 2-3).

Soils

Item 4-1: Soil Displacement/Organic Residue

Activity: What are the impacts of activities on soil displacement and organic residue?

Unit of Measure: Benchmark vs. sample soils

Reporting Period: 5 years

Variability which would initiate further evaluation: Forest Plan standards not met.

Monitoring Results: Soil displacement and organic residue were not reported on in 2004. Efforts on the BDNF contributed soil compaction information to a Regional soil monitoring effort focusing on soil quality and function. The following discussion is a report on those results. Also see Deerlodge soil monitoring item 9-3 for further evaluation.

Since 2000 several proposed activity areas for both forest and rangeland habitat types have been evaluated by use of a proving ring penetrometer. The penetrometer measures pressure, which is a surrogate for space in the soil or compaction. Bulk density is another way of measuring the same thing.

Analysis completed for several environmental impact statements (Mussigbrod Post Fire Vegetation Management, Basin Creek Fuels Management; Sheep Creek Post Fire Vegetation Management; Grasshopper Fuels Management, Keystone Quartz Fuels Management, and Madison Range Allotments Management Plan CE) show that soil strength on these project areas and their respective watersheds range from natural (typically less than 1 megapascal (MPa) where 1 MPa==145 lbs/sq.in) values to moderately high values (approximately 2MPa). The natural benchmark soils are in watersheds that do not and may never have had any type of land management disturbance such as timber harvest or grazing.

Most historic timber harvest areas show overall near natural to moderately elevated soil resistance values (between 1 and 2 MPa with an average of about 1.1 MPa). Exceptions to these findings are existing logging roads, landings, some skid trails, and areas with aggressive dozer slash piling, which are moderately to highly impacted and show soil resistance values of up to 2.5MPa with an average of about 1.6 MPa. These more severely disturbed areas range from about 25-50% of the area of treatment units in the older timber harvest projects. The high area of disturbance in these older (15 or more years old) activity areas is likely related to slope, wider operating season than is common now, and especially the effects of dozer piling.

More recent timber harvest treatments show penetration resistance values within the same range as the older areas but over less area. Dozer site preparation has been shown to be unnecessary and the practice has been generally been abandoned. In the last 10 years or so, operating windows have generally excluded the spring season and have narrowed to the driest times of the summer and to winter logging over snow. In addition soil quality standards have been implemented at the activity level since 2001 which has placed more emphasis on reducing ground disturbance. On the West Face timber sale units monitored in September 2004, detrimental disturbance was estimated at less than 10 percent overall. An exception was noted on a unit where excessive disturbance occurred near a landing and road. Soil resistance values on disturbed plots ranged from 96 to >254 psi or .6 to >1.75 MPa (natural to moderate impacts).

Rangeland key areas and high use areas of primary range shows low to moderately increased soil penetration values of up to 2MPa, for example, where trailing occurs. Detrimental soil disturbance from compaction in high use grazing areas has been found to be from about 2-8% of the area of the grazing activity area.

Evaluation: Forest Plan standards require that Best Management Practices for soils (FSH 2590.22) be refined and adopted during the environmental analysis process and incorporated into project design and implementation and activities be designed to sustain site productivity. Monitoring of West Face Timber Sale showed standards were being met and implementation was being modified to sustain site productivity.

In 2004, we participated in a Regional soil quality and function monitoring effort aimed at protecting soil productivity. The program is in its early stages. Based on the projects that have been assessed since 2001, it appears that the trend in detrimental disturbance is likely downward (less disturbance) since the introduction of greater management concern for soil productivity, biodiversity, and function.

Recreation

Item 5-1: Recreation Use

Activity: How does actual dispersed/developed/wilderness use compare to projected use?

Unit of Measure: RVDs (Recreation Visitor Days)

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 20% variation from projections over five years.

Monitoring Results: The Forest Service has transitioned form the old Recreation Inventory Management System which measured in Recreation Visitor Days (RVDs) to the National Visitor Use Monitoring (NVUM) survey which measures in recreation visits.

The NVUM baseline survey was conducted on the Beaverhead-Deerlodge in 2000. The Forest's results were published in the FY03 Monitoring and Evaluation Report and are available at http://www.fs.fed.us/recreation/programs/nvum/. NVUM reports 1,057,000 visits to the Forest. A visit is equivalent to 21.7 hours. Forest Plan projections based on RIM were for 1,540,000 visitor days.

The 5-year survey is being repeated on the Forest in 2005. Trends in visitor use, spending and satisfaction should be available to us late in 2006.

Evaluation: Because of the shift from visits to visitor days, it is very difficult to assess if actual use varies more than 20% from projections made in the Forest Plans. Because NVUM has been adopted nationwide and offers a much superior statistically supported methodology, this will become the new base for the Forest to monitor trends and visitor satisfaction. The 5-year survey is being repeated on the Forest in 2005. Trends in visitor use, spending and satisfaction should be available to us late in 2006.

Item 5-2: Wilderness Compliance

Activity: Is actual wilderness use in compliance with wilderness management direction?

Unit of Measure:

Reporting Period: 5 years

Variability which would initiate further evaluation: Noncompliance with wilderness management direction.

Monitoring Results: An extensive 2004 year-end report for the Anaconda Pintlar Wilderness addresses compliance with the 2001 Anaconda Pintlar Wilderness Plan. The report includes survey data on the self-issued mandatory registration, as outlined in the 2001 Plan, data on visitor encounters, campsite conditions, etc. The report is in the files at the Philipsburg Ranger District. Data on compliance with Wilderness Management is also entered through the INFRA

data system for the Anaconda Pintlar and Lee Metcalf Wilderness areas. This data is available on request from the Philipsburg, Wise River or Madison Ranger Districts.

Evaluation: No evaluation of the data was available for this report.

Item 5-3: Roadless Acres

Activity: Are there actual changes in the inventoried roadless acres comparable with the changes predicted in Forest Planning?

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: Decrease in roadless acres 5% greater than predicted.

Monitoring Results: The 1983 roadless inventories for the Beaverhead and Deerlodge Forest were updated in 2004 as part of the Forest Plan revision process. Additions and deletions to existing roadless areas and addition of new areas were based upon criteria in the FSH 1909.12 "Inventory and Evaluation of Roadless Areas" and the Beaverhead-Deerlodge "Process for Roadless Reevaluation (January 2004).

During the 2004 inventory, roadless areas were mapped and acres calculated using Geographic Information Systems (GIS) technology. Digitizing old boundaries and recalculating road buffers resulted in some acre changes. In addition, District specialists mapped out areas where activities like roading, timber harvest or mining have changed the roadless character since 1983. They also added areas that were either overlooked in the earlier inventories or have regained roadless character through road obliteration or passage of time. These changes in the inventory are being shared with the public for input and additional review.

New areas identified include:

Middle Creek Addition to Garfield Mountain (Dillon Ranger District)

Cowboy Heaven (Madison Ranger District

Madison Range Additions (Madison Ranger District)

Lost Creek (land exchange on Pintlar Ranger District)

Two areas were suggested for elimination from the inventory. A roadless area must have at least 5,000 acres or be contiguous to an existing wilderness area to be included in the roadless area inventory. **Beaver Lake Unit 1-003B** and **Dixon Mountain Unit 1-019** are both well below 5,000 acres. The potential of these two areas for wilderness or providing values associated with roadless criteria was evaluated in case a high value might require special consideration. Both areas rated far below the breakpoint for consideration as recommended wilderness (8.9 and 13.1 points out of 40, respectively).

Evaluation: Currently, development of roadless areas is far less than the Forest Plan predicted. Only 1% of the total acres projected for development of the Forest Plan were actually developed by the end of the first decade. National pressure to protect roadless lands in the National Forest System manifested as the Roadless Area Conservation Rules of 2001 and 2005. With this shift in public interest, the Forest Service has been managing roadless areas under an Interim Directive from the Chief of the Forest Service since 2000. This Directive has resulted in little or no activity taking place in inventoried roadless areas on the BDNF since 2000.

The 2004 roadless inventory (subject to change before the Final EIS is published in 2006) shows an increase from 1,662,569 to 1,858,615 acres. The increase is largely due to the addition of the four areas described above.

Item 5-4: Facility Access

Activity: Are all newly constructed and reconstructed recreation facilities designed to be accessible to people with disabilities?

Unit of Measure: Projects

Reporting Period: 5 years

Variability which would initiate further evaluation: Greater than 25% of facilities constructed or reconstructed in a 5 year period do not provide access for people with disabilities.

Monitoring Results: All recreation facilities at developed sites were constructed or reconstructed in 2004 to be accessible to people with disabilities in compliance with the American with Disabilities Act (ADA). We use the book "Universal Access to Outdoor Recreation: A design guide" published in 1994 as the reference for accessibility design of recreation facilities.

Evaluation: All projects comply with requirements for access for people with disabilities. No further evaluation is required.

Item 5-6: Historic Preservation

Activity: Are management activities conducted in accordance with Section 106 of the National Historic Preservation Act?

Unit of Measure: Projects

Reporting Period: Annual

Variability which would initiate further evaluation: Any project found to be out of compliance.

Monitoring Results: All projects were in compliance with Section 106 during 2004.

Evaluation: No further evaluation is required.

Range

Item 6-1: Forage Utilization

Activity: Are actual use levels and capacity similar?

Unit of Measure: Number of AUMs

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 5% change from the projected AUM capacity.

Monitoring Results: Actual use by cattle in 2004 was 87,377 head months or 115,338 Animal Unit Months (AUMs). Actual use by sheep in 2004 was 21,989 head months or 6597 AUMs. Total actual use by livestock was 121,935 AUMs. .

Evaluation: Actual use is 64% of the capacity projected in the Forest Plan. In 1996, the Riparian Amendment added more stringent riparian forage utilization and stream bank compaction guidelines and estimated a greater decline in AUM capacity. The variability measure for this monitoring item was not adjusted accordingly. Compliance with forage utilization standards has resulted in the decline of actual AUMs grazed as projected by the Riparian Amendment FEIS. Current actual use is considered much closer to the available forage than the projections in the 1986 Forest Plan.

Item 6-2: Range Improvements

Activity: Are the projects being accomplished as programmed?

Unit of Measure: Projects, acres

Reporting Period: 5 years

Variability which would initiate further evaluation: Less than 90% of scheduled projects accomplished over five years.

Monitoring Results: In FY04, range construction projects included 14.5 miles of barbed wire fence, 4 miles of electric fence, 38 water developments, 5 miles of pipeline, and 3 cattleguards.

Evaluation: This monitoring item is outdated. The project schedule in Appendix B was only developed through 1991. These projects were either completed or became outdated. Projects are currently derived through AMP updates. The funded level of construction is far behind what is needed to replace worn out structures and for new construction needed to implement existing approved Allotment Management Plans.

Item 6-3: Noxious Weeds

Activity: Are the program levels necessary to control weed infestations being identified and accomplished?

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: Less than 80% accomplished over five years.

Monitoring Results: On combined Beaverhead Deerlodge N.F. 8004 acres of noxious weeds were treated in 2004 under all funding sources including cost share.

Evaluation: The BDNF far exceeded noxious weed treatment acres scheduled in the Forest Plans. However, the 2002 Noxious Weed Record of Decision envisioned treating 16,000 acres per year. This level of treatment has not been reached during any of the years since 2002.

Item 6-4: AMP Updates

Activity: Are allotment management plans and updates being done as scheduled?

Unit of Measure: Number of plans

Reporting Period: 5 years

Variability which would initiate further evaluation: Less than 4 new plans per year; less than 13 updates per year.

Monitoring Results: The Forest completed the NEPA and decision process for 11 AMPs in 20.

Evaluation: Fewer updates and plans are being completed than the Forest Plan envisioned. Beginning in FY03, the Forest began to lag behind the schedule outlined in the Beaverhead Settlement Agreement with the National Wildlife Federation. As most AMP decisions are tied up in appeals and occasionally one is tied up in litigation, planning will likely be continually behind.

Item 6-5: AUM Outputs

Activity: Are Forest Plan outputs (AUMs) consistent with Forest Plan projections?

Unit of Measure: AUMs

Reporting Period: 5 years

Variability which would initiate further evaluation: 10% less than projected carrying capacity.

Monitoring Results: Actual AUMs in 2004 were 121,935 or about 64% of the 1986 plan estimate.

Evaluation: Changed conditions, drought, ranch closures, the riparian amendment, transitory forage decline, conifer encroachment onto shrubland/grassland have all contributed to fewer AUM's than envisioned in the 1986 plan. These conditions are being addressed in the Forest Plan Revision process now underway.

Timber

Item 7-1: Timber Sold

Activity: Are Forest outputs (MCF, MBF, Acres) consistent with Forest Plan projections/yield assumptions/conversion ratios?

Unit of Measure: Acres, MMCF, MMBF

Reporting Period: 5 years

Variability which would initiate further evaluation: ±10% change from ASQ and/or projected acres harvested over five years.

Monitoring Results: The Forest Plan projects an allowable sale quantity of 5.8 MMCF (17.3 MMBF) of timber to be harvested annually from 2700 acres for the first decade. The information presented in Table 8 below displays the timber sale program and harvest data for Fiscal Years 2000-2004, as well as the projected Forest Plan outputs.

Table 8 - **Timber Sale Program, Fiscal Years 2000-2004**

VOLUME SOLD (MMBF) MILLION BOARD FEET	FOREST PLAN	2000	2001	2002	2003	2004	AVG
Chargeable Volume							
Live	17.3	2.7	2.1	2.8	0.1	0.6	1.7
Dead	n/a	0.0	0.0	0.0	0.0	0.0	0.0
Chargeable Total	17.3	2.7	2.1	2.8	0.1	0.6	1.7
Nonchargeable Volume	n/a	0.3	2.9	2.4	0.8	0.8	1.4
Total Volume Sold	n/a	3.0	5.0	5.2	0.9	1.4	3.1
Volume Not Sold:[2]							
Chargeable Volume	n/a	0.0	0.0	0.1	0.4	0.0	0.1
Nonchargeable Volume	n/a	0.0	0.0	0.0	0.0	4.6	0.9
Total Volume Not Sold	n/a	0.0	0.0	0.1	0.4	4.6	1.0
Volume Harvested	17.3	4.2	4.2	5.8	4.2	2.5	4.2
Acres Harvested	2700	532	315	895	931	163	567

[2] Not Sold due to lack of bids, litigation, or deficit with no request.

A total of 6.0 MMBF was offered and 1.4 MMBF was sold by the Forest in FY2004. Of that amount, 0.6 MMBF was chargeable volume credited to the ASQ. Harvest activities occurred on 163 acres.

The five year average figures showed a total volume sold of 4.2 MMBF/year. Total chargeable volume sold was 1.7 MMBF/year, or about 10% of the average annual ASQ volume. The total volume harvested averaged 4.2 MMBF/year, which is about 24 percent of the Forest Plan projected level. Total acres harvested averaged 567 acres/year, approximately 21 percent of the Forest Plan level. The volume harvested has decreased over the past five year period due to a decrease in the volume under contract as less volume is sold.

The five year average timber volume per harvest acre is approximately 7.4 MBF/acre compared to the Forest Plan projected yield of approximately 6.4 MBF/acre.

Evaluation: Over the last 5 years, only 24% of the ASQ is being offered for sale and only 21% of the acres projected in the Plan are being harvested, far below the 10% change which triggers further evaluation. The problem with ASQ was already becoming apparent one year after the Plan was approved (1987 Monitoring and Evaluation Report). The 5 Year Monitoring Review (1992) and Analysis of the Management Situation (2002) describe in detail the many reasons for this short fall. Alternatives being considered during Forest Plan Revision include constraining ASQ projections with realistic budget projections and eliminating suitable timber base in those areas where conflicts prevented us from harvesting in the past, like inventoried roadless areas.

Item 7-2: Timber Harvested

Activity: Is harvest accomplished as scheduled?

Unit of Measure: Acres, MBF

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 20% change from the projected mix of lands and species.

Monitoring Results: Acres harvest by Management Area as projected in the Forest Plan is compared with FY2004 and average FY2000-FY2004 data in Table 9.

Table 9 - **Summary of Acres Harvested by Management Area.**

	FOREST PLAN		FY2004		AVE. 2000-2004	
1 MINMA	0	0	0	0	35	6
13 TMWET	0	0	0	0	17	3
16 TIMBR	1204	44	158	97	155	27
17 TMRNG	32	1	0	0	0	0
18 TMREC	143	5	0	0	0	0

	FOREST PLAN		FY2004		AVE. 2000-2004	
19 TMLOW	54	2	0	0	2	<1
20 TWTDS	866	32	0	0	261	46
21 TMWLD	273	10	0	0	27	5
24 BGRNG	-	0	0	0	24	4
26 TMEKS	143	5	0	0	10	2
8 SPREC	0	0	0	0	1	<1
25 ELKSU	0	0	5	3	32	6
RIPRN	0	0	0	0	2	<1
TOTAL	2715	100	163	100	566	100

In FY 2004 chargeable volume was removed from 158 acres, approximately 6 percent of acres projected in the Forest Plan.

For the five year average, chargeable volume was harvested from 472 acres annually. This is approximately 17 percent of projected acres harvested in the Forest Plan.

Evaluation: Volume and area harvested vary more than 20% from Forest Plan projections. Item 7-1 describes why. Management areas scheduled for harvest have also changed from projections. Since the big wildfires of 2000, budgets and manpower have shifted from timber management to fuel reduction projects. These tend to take place outside of management areas with suitable timber base. Alternatives being considered for Forest Plan revision include shifts to timber harvest to meet other resource objectives like fuel reduction.

Item 7-3: Suitable timber base

Activity: Is there change in the suitable timber base as a result of implementation and ground truthing?

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 5% change in suitable acres over five years.

Monitoring Results: This item was not reported on in FY04. Suitable timber acres are being re-allocated as part of the Forest Plan Revision. No evaluation was made.

Item 7-4: Silvicultural Treatments

Activity: Are the Forest Plan projections accurate and is work accomplished as scheduled?

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: ± 20% change from projections over five years.

Monitoring Results: Timber stand improvement includes precommercial thinning and stand improvement after selection harvests. Usually this occurs within the suitable timber base. Occasionally we treat acres outside the suitable base for reasons other than timber production, such as cleaning up an old selective post and pole harvest along a main road.

Reforestation includes both planting and natural regeneration from seeds left after harvest. Most natural tree regeneration occurs on harvest sites prepared by dozer piling, trampling, or other mechanical soil scarification.

Tables 10-11 show the acreage of timber stand improvement and initiation of natural reforestation as predicted by Management Area in the Forest Plan, accomplished in 2004, and the average accomplishments from 2000 through 2004.

Table 10. - Acres of Cultural Practices by Management Area: Forest Plan Levels

MANAGEMENT AREA	1	8	13	14	16	17	18	19	20	21	22	24	25	26	TOTAL
Timber Stand Improvement	0	0	0	0	382	1	0	0	237	0	0	0	0	0	620
Reforestation	0	0	0	0	1204	32	143	54	866	273	0	0	0	143	2715

Table 11 .- Acres of Cultural Practices by Management Area: Five Year Averages

Management Area	1	8	13	14	16	17	18	19	20	21	22	24	25	26	Total
Average TSI 2000 – 2004	0	0	0	0	0	0	0	0	13	7	0	0	0	0	20
Average Planting 2000 – 2004	0	0	0	0	0	0	0	0	12	0	0	0	0	0	12

No timber stand improvement OR reforestation activities too place in FY 2004. Average Timber Stand Improvement for the last five years (0 acres) is 0 percent of Forest Plan projections. Planting acres are at 0.4% of the Forest Plan level. In addition to the planting, natural regeneration occurred on 260 acres over the five year period.

Evaluation: Average timber stand improvement and reforestation are a fraction of Forest Plan projections. Large acreage reduction in TSI is due to the listing of Lynx as a Threatened and Endangered Species. Reduced reforestation acres are due to lower than planned timber harvests and not from inadequate reforestation of harvested acres. Also, the Forest is harvesting a higher percentage of commercial thinning than projected. These do not require reforestation. Concern about the aces of suitable timber base that can realistically be managed for growth and yield is central to developing alternatives during Forest Plan Revision.

Item 7-5: Natural Regeneration

Activity: Is natural regeneration occurring as predicted and are harvested lands being reforested promptly?

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: Less than 90% accomplishment of natural regeneration; 10% of harvested lands not adequately restocked in five years.

Monitoring Results: The Plan projects that 72 percent of harvested stands will be regenerated by natural means. 28 percent would be by planting.

In FY 2004, no acres were regenerated on unprepared sites by natural seed fall, 0 percent were planted. For the last five years our regeneration has been 97 percent by natural seed fall and 3 percent by planting.

Only stands harvested in 1986 through 2000 have completed a full five year monitoring period since the Forest Plan has been in effect. During this period, 248 stands totaling 6043 acres have been harvested using even aged regeneration methods. One hundred percent of those stands are adequately restocked either through planting or natural seeding. Ninety-seven percent of the total acres harvested during this time period were adequately stocked within 5 years. No stands have been harvested using even aged harvest systems between 2000 and 2004.

Evaluation: Natural regeneration is occurring at higher rates than predicted. No further evaluation is required.

Item 7-6: Silvicultural Practices

Activity: Are standards being followed?

Unit of Measure: Projects

Reporting Period: 5 years

Variability which would initiate further evaluation: Noncompliance with silvicultural guidance, questions regarding the validity of the silvicultural assumptions.

Monitoring Results: The Plan projects 100 percent of the harvest will be in even aged systems (clearcut, seed tree, and shelterwood). The FY2004 harvest was 100 percent uneven-aged and commercial thins.

The five year average shows less than 1 percent of the harvest being in the even-aged category and 99+ percent was selection and commercial thinning.

Table 12 summarizes harvest method by year and compares it to predictions in the Forest Plan.

Table 12 - Acres Harvested by Harvest Method.

HARVEST METHOD	FOREST PLAN	FY2004	AVG 2000-2004
Clearcut/Seed Tree	2013	0	<1
Shelterwood	702	0	0
Selection/intermediate harvest	-	163	566
Salvage	-	0	0
Total	2715	163	567

Evaluation: Silvicultural guidance is being followed as required. However, Forest Plan assumptions that clearcutting would be the primary harvest method through the entire planning period are erroneous. In 1992, a policy decision was made to reduce the use of this practice nationwide and clearcut acres have steadily fallen. The shift to selective treatments from clearcutting has also reduced the volume per acre harvested. This issue is being reconsidered during Forest Plan Revision.

Facilities

Item 8-1: Roads

Activity: Are the assumptions about local/collector road density, miles, standards and costs correct?

Unit of Measure:

Reporting Period: 5 years

Variability which would initiate further evaluation: ±10% in any one year; noncompliance with Forest Plan standards.

Monitoring Results: Table 13 displays Beaverhead-Deerlodge National Forest accomplishments in road construction and reconstruction over the past five years, as well as the projections from the individual Beaverhead and Deerlodge Forest Plans. (Note: Until 1998, the Beaverhead and Deerlodge National Forests reported road accomplishments separately. Due to the consolidation

of the two Forests and subsequent changes in budgeting and reporting, the mileages shown are totals for the combined Beaverhead-Deerlodge National Forest. Thus, these numbers cannot be directly compared to the s shown in Beaverhead Forest Monitoring and Evaluation reports for FY1996 and earlier.)

Table 113 - Road Construction and Reconstruction, Fiscal Years 2000-2004.

ACTIVITY	BVHD FOREST PLAN MILES	DRLG FOREST PLAN MILES	TOTAL MILES	2000 MILES	2001 MILES	2002 MILES	2003 MILES	2004 MILES	AVG. 2000-2004
Construction	30.8	24.7	55.5	0	1.0	0.6	0.5	0	0.4
Reconstruction	11.7	4.5	16.2	0	2.6	5.1	5.4	21.9	7.0

The Forest Plan projects 29 miles of new road construction per year to provide for timber access, for an average of 1.7 miles per million board feet (MMBF) of timber offered. In actuality, less than one mile of specified road was constructed for timber sales during the entire five-year period (FY2000-2004), less than one percent of the projected miles. Reconstruction averaged only forty-three percent of the combined Forest Plan projected level during the same period. In FY2004, no new permanent (system) roads were constructed on the Beaverhead-Deerlodge; 21.9 miles of existing road were reconstructed, nearly double the combined total from the previous four years.

Evaluation: Forest Plan road construction projections are far off of the current situation. The trend of decreased road construction is occurring, at least in part, due to public opposition to the development of new specified roads; as a result, timber harvest units are situated along existing roads or are accessed with temporary roads. Even temporary road construction is limited, however, with an estimated average of 0.5 mile/MMBF. Emphasis has shifted toward reconstruction and maintenance of the existing road system, and identifying the minimum transportation system necessary for meeting Forest management objectives. This issue is being reevaluated during Forest Plan Revision.

Item 8-2: Road Restrictions

Activity: Are the assumptions about road management valid, especially those regarding closures and restrictions?

Unit of Measure: Miles

Reporting Period: 5 years

Variability which would initiate further evaluation: Noncompliance with Forest Plan.

Monitoring Results: According to the Forest Plan, "Most of the new roads constructed...will be restricted to motorized public access with the exception of snowmobile use. More will be closed in the fall than during the rest of the year to maintain elk security. Some will be closed

yearlong." (Forest Plan, page II-11). Road or area closure methods will be determined through the plan implementation process and will be the methods determined to be most effective and cost-efficient given the Management Area objectives. Closure methods may include gates, signing, physical barriers, and obliteration of the entry portion of the road. New roads scheduled for closure will be so signed and/or gated when constructed.

Gates are the primary method of physically closing specified roads on the Forest, followed by signs only (no physical barrier), natural barriers, and man-made barriers. Many roads have been obliterated near the entry and/or have had right-of-way slash scattered on the road bed where long-term closures are planned. Approximately 10.4 miles of low standard roads were decommissioned this year. Table 14 shows the extent of road use restrictions on the Forest.

Table 14 - Road Use Restrictions[3], Fiscal Year 2004.

RESTRICTION PERIOD	RESTRICTED MILES
Yearlong	328
Seasonal	867

Evaluation: Assumptions about road closures and restrictions are still appropriate. No further evaluation is required.

Item 8-3: Trail Management

Activity: Is the scheduled maintenance and reconstruction being accomplished as scheduled?

Unit of Measure: Miles

Reporting Period: 5 years

Variability which would initiate further evaluation: Less than 80% of schedule accomplished over five years.

Monitoring Results: The Beaverhead-Deerlodge Forest improved (reconstructed) 21 miles of trail and maintained 560 miles of trail in FY04. These accomplishments exceeded targets.

Evaluation: The Forest Plan only scheduled trail construction/reconstruction projects for the first 5 years of the Plan. These projects have all been completed. Accomplishment of this monitoring item is now measured by whether targets are met. Targets were met in Fy04.

Item 8-4: Road Management

Activity: Is the scheduled maintenance and planned management occurring?

[3] This displays restrictions applicable to standard highway vehicles. Many roads have different restrictions for other types of traffic, such as motorcycles, ATVs, and snowmobiles

Unit of Measure: Miles

Reporting Period: 5 years

Variability which would initiate further evaluation: Less than 80% of schedule accomplished over five years.

Monitoring Results: Although the Forest Plan displays no annual target for maintenance, the Forest prepares an annual road maintenance schedule. Miles of road maintenance accomplished during Fiscal Year 2004 are displayed in Table 15.

Table 15 - Road Maintenance Accomplishments, Fiscal Year 2004.

ACCOMPLISHED BY	MILES OF ROAD
Forest Service	379
Cooperator	12
Total	391

Maintenance shown above consisted of patrol blading and other routine road maintenance. Miles in the "Cooperator" column reflect patrol blading accomplished under cooperative agreements by County road crews on National Forest roads.

Scheduled maintenance activities depend on the availability of funds. The Beaverhead contains approximately 2569 miles of existing National Forest System Roads. We estimate that 25 to 30 percent of this mileage receives some maintenance in a typical year, but only about 15 percent is fully maintained to the desired standard and is consequently deteriorating.

A total of 10.4 miles of road were decommissioned on the Forest in FY2004, including 0.9 mile of system road and 9.5 miles of unclassified (non-system) road.

Evaluation: The Forest Plan did not establish a baseline or target against which to measure accomplishment for this item. No further evaluation is possible.

Item 8-5: Exterior Access

Activity: Are access points being developed as scheduled?

Unit of Measure: Miles

Reporting Period: 5 years

Variability which would initiate further evaluation:

Monitoring Results: This monitoring item is not included in the list of monitoring requirements found in Table VI-1 of the Forest Plan. The item was identified during a "needs assessment" as part of the monitoring process for 1988, and is included in this year's report for informational purposes only.

Public and administrative access to the Forest is difficult or unavailable in many areas due to intervening private landholdings. A list of potential access points is displayed in Appendix E of the Forest Plan. A number of additional access points have been identified since the Forest Plan was implemented (see Monitoring Item 8-5 of the Fiscal Year 1990 Forest Plan Monitoring and Evaluation Report for specific examples).

The Forest Plan estimates an average of 1.8 miles of exterior access road construction and 8.2 miles of reconstruction per year. Actual construction and reconstruction has been considerably less. During the five-year period from FY2000-2004, only one major exterior access project was completed. Approximately five miles of road were constructed, reconstructed, or reconditioned to improve recreational access to the Willow Creek area in the northwest portion of the Gravelly Range. During FY2004, no new exterior access projects were initiated.

Evaluation: No further evaluation is required. This is an informal addition to the Monitoring Plan.

Protection

Item 9-1: Insect and Disease Protection

Activity: Is the management direction adequate to deal with insect and disease problems?

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: 20% increase in rate of spread or volume loss compared to predicted mortality.

Monitoring Results: Vegetation analysis for Forest Plan Revision found that the majority of the forest types on the BDNF have advanced into mid or late seral conditions and associated size classes that may contribute to increases in bark beetle populations, especially in relation to recent droughts in the area. These bark beetles are native insects that have existed for long periods of time in the coniferous forests, usually cycling from low endemic levels to large epidemics under the influence of climate, host size, and presence of parasites and predators. Many of the conditions leading to population increases are beyond land manager's capability to control and are for the most part natural occurrences within forested stands. These bark beetle epidemics often result in widespread mortality of trees for a period of several years that cause considerable public concern that the entire forest is dying. For millennia forests have survived mortality and regeneration cycles associated with insect activity. Insect killed trees provide habitat for various species of wildlife or wood from salvage with few if any long lasting adverse effects in and of themselves. In some cases it is desirable to protect individual trees or small areas such as in campgrounds, administrative sites, accomplished by direct controls using insecticides, or other treatments such as disaggregating pheromones.

Insect and disease conditions were monitored by the Forest Health Protection branch of USDA Forest Service State and Private Forestry and the Montana Department of Natural Resources, Forestry Division. Based on these aerial surveys the BDNF has the following:

Douglas-Fir Bark Beetle	4766 acres infested (down from 6403 in 2003)
Mountain Pine Beetle	12,017 acres of mortality in Lodgepole pine
	109 acres of ponderosa pine
	28,800 acres of whitebark pine.
Western Balsam Bark Beetle	21,175 acres infested
Western Spruce Budworm	37,000 acres infested to some degree.

Treatment of insects in FY04 included:

- 175 acres of campgrounds were treated with carbaryl to protect trees against mountain pine beetle and 450 acres were treated with mountain pine beetle trap lures.
- 500 acres were treated with spruce beetle traps.
- 15 acres of Douglas-fir were treated with disaggregating pheromones for Douglas-fir beetle
- 3 acres of lodgepole pine were treated verbenone disaggregating pheromone and 10 individual whitebark pine trees were also treated.

The Lemhi Pass area was surveyed for root rots and other pathogens that might cause hazard trees to develop in this highly used historic area.

Evaluation: The Forest Plan did not establish a baseline or mortality projections against which to measure variance of this item. No further evaluation is possible.

Economics

Item 10-1: Economic Assumptions

Activity: Verification of predicted costs vs. experienced costs.

Unit of Measure: Dollars

Reporting Period: 5 years

Variability which would initiate further evaluation: ±15% of predicted costs over five years.

Monitoring Results: The FY04 timber and salvage sale budget on the Forest was $1,664,463. That budget went toward the sale of 3,539 MBF. That amounts to $470/MBF. The Forest Plan projects a timber budget of $1,094,106 in 2004 dollars to offer an average of 17,300 MBF. That amounts to approximately $63/MBF.

Evaluation: While the numbers above only offer a rough approximation of actual cost/MBF (volume prepared, offered and sold are all included in the budget) it has been clear that

experienced costs of offering timber have been notably higher than Forest Plan projected costs since as early as 1988. The 1988 Monitoring and Evaluation Report described actual timber sale preparation costs of $47/MBF while the Plan predicted $14/MBF. Over the years, timber sale preparation and administration have continued to cost more per board foot of timber than predicted due to a number of factors. Mitigation requirements for listed species (both wildlife and fish) continue to increase. Additional requirements evolve based on appeals and litigation. A shift from clearcuts to more intermediate harvests has increased the cost per acre and cost per board foot.

Item 10-2: Timber Values

Activity: Verification of predicted values for timber.

Unit of Measure: Dollars

Reporting Period: 5 years

Variability which would initiate further evaluation: ±25% of prediction over five years.

Monitoring Results: In FY04, we received a total of $1,431,000 in NFTM to prepare and offer 7.6 mmbf of timber and also administer the volume under contract. In the salvage sale fund, we received authorization to spend $648,000 to prepare an additional 4.5 mmbf of timber. We do not have a tracking system for expenditures and revenues in place to meaningfully split out the costs for the Beaverhead and Deerlodge. TSPIRS data was dropped in 1998 and we don't track those items any longer.

Evaluation: Plan predictions made prior to 1986 are no longer valid. Timber values are being reassessed during Forest Plan Revision.

Item 10-3: Budgets

Activity: Assess program budget vs. actual dollars received.

Unit of Measure: Dollars

Reporting Period: 5 years

Variability which would initiate further evaluation: ±15% of prediction by funding item over five years.

Monitoring Results: Table 16 displays actual expenditures in FY04 within the current expanded budget line items (EBLI). Changes in budget code structure since the Plans were written make it difficult to compare individual programs over the years. This table will give some indication, however, of shifts in programs and Forest Budget Totals over the years. All three columns of budget information are for the Beaverhead-Deerlodge Forest combined.

Table 16 - Expenditures in Fiscal Year 2004 by EBLI.

EBLI	DESCRIPTION	1986 Plan Projected Budget[4]	FY03 Budget Expenditures ($000)	FY04 Budget Expenditures ($000)
BDBD	Brush Disposal	366	105	90
CMFC	Facilities	591	1442	1511
CWFS	Cooperative Work	73	218	99
CMRD	Rd Construction and Maintenance	5722	1218	1518
CMTL	Trail Construction & Maintenance	549	1057	1198
CWKV	Knudtson/Vanderberg Fund	1326	345	205
HWHW	Hazardous Waste		131	1478[5]
WFHF	Hazardous Fuels		763	1256
WFPR	Fire Protection/Preparedness	816	2768	4047
NFIM	Inventory and Monitoring		490	729
NFLM	Land Ownership	779	189	208
NFMG	Minerals and Geology	828	441	501
NFPN	Land Mgt Plans (Plan Revision)		1076	975
NFRG	Grazing Management	1458	819	1241
NFRW	Recreation, Heritage, Wilderness	1546	908	1071
NFTM	Timber Sales Management	3082	976	1072
NFVW	Vegetation and Watershed	835	849	1194
NFWF	Wildlife and Fish	833	449	528
RBRB	Range Betterment	388	103	103
SSSS	Timber Salvage	49	676	593

[4] Base year for costs used in initial Forest planning was 1978; these were converted to 2004 dollars using a GDP deflator of 2.4422

[5] includes a substantial capital investment in the Luttrell waste depository with Hazardous Waste funds

EBLI	DESCRIPTION	1986 Plan Projected Budget[4]	FY03 Budget Expenditures ($000)	FY04 Budget Expenditures ($000)
WCCS	Computer Services		235	347
WCFE	Fleet		949	1214
TRTR	Road and Trail Restoration		36	96
SPSP	State and Private/Fire Plans		198	254
Admin	Administration	3260		
	TOTAL	$22,502	$16,445	$21,527[6]

Evaluation: Budget Expenditures in FY 04 were $21,527,000 compared to $16,445,000 in FY03. This is within 4 percent of the Forest Plan projection of $22,502,000 (in FY 04 dollars). While most budgets held fairly constant between FY03 and FY04, the Luttrell Waste Depository project increased Hazardous Waste considerably. This project increased the 2004 budget by about $1,300,000. Without the Luttrell Project, the FY04 budget would have been 10% lower than Plan projections. The outlook for Forest Service budgets over the next 5 years is for continued declines, or at best, stable budgets.

The National Fire Plan and Healthy Forest Initiative stimulated higher Hazardous Fuels and Fire Protection/Preparedness budgets. Fire suppression is not a budgeted activity, but the Forest spent $2,744,200 on fire suppression in FY04. This compares to $9,326,500 in FY03.

Adjacent Lands

Item 11-1: Local Economies

Activity: How management of the National Forest affects the local economy, resource values, local uses, and lifestyles?

Unit of Measure: N/A

Reporting Period: 5 years

[6] includes a substantial capital investment in the Luttrell waste depository with Hazardous Waste funds

Variability which would initiate further evaluation: Unacceptable results or impacts according to ID team and/or Management Team review.

Monitoring Results: The Beaverhead-Deerlodge National Forest accounts for 42% of the land in 7 counties. The Forest is surrounded by a number of communities, as small as Mammoth, and as large as Butte. The Forest is a source of natural resources, recreational opportunities and lifestyle settings for the residents of those adjacent communities. This monitoring item will report on the economic value of activities and resource outputs from the Beaverhead-Deerlodge National Forest in 2004.

The value of activities and resource outputs from the Beaverhead-Deerlodge National Forest (as a whole) were calculated for 2004 using an economic input output model called IMPLAN. IMPLAN was used to develop the direct and indirect effects of outputs, revenues, expenditures and employment on employment and labor income in the 8 counties affected most directly by the Forest. Data on recreation visits were derived from a 2000 National Visitor Use Monitoring survey conducted on sites around the BDNF. We estimate a 1% growth of the numbers reported in the FY03 report.

Table 17 - Values of Activities and Resources from the Beaverhead-Deerlodge National Forest in 2004.

Resource Area	Output	Employment (Jobs related to FS activities)	Labor Income ($million related to FS activities)
Recreation (visits)	594,000	557	9,491
Fish and Wildlife (visits)	473,620	568	9,780
Range (head month)	146,983	56	875
Timber (MMBF)	3.539	145	4,134
Minerals	Not available	-	-
Payments to States/Counties		4	127
Forest Service Expenditures ($million)	$21	408	22,930
Forest Service Employment	143 permanent 45 Seasonal		
TOTAL		1,739	$47,337

Table 17 shows that in 2004, the Beaverhead-Deerlodge National Forest was responsible for contributing approximately 1,739 jobs to the 8-county area economy. This amounts to 3.8% of

the total employment of 45,204. The Forest contributes about $47 million in labor income to the 8-county area. This amounts to 4.4% of the areas labor income of $1,061 million.

For a complete discussion of how management of the Beaverhead-Deerlodge National Forest affects local uses and lifestyles, refer to Volume I of the Draft Revised Land and Resource Management Plan, "Social and Economic Impacts", June 2005.

Evaluation: The Forest Leadership Team has not identified unacceptable impacts.

Item 11-2: Adjacent Lands

Activity: What is the effect of other agencies or private landowners on National Forest Management?

Unit of Measure: N/A

Reporting Period: 5 years

Variability which would initiate further evaluation: Unacceptable impacts on proposed activities, Forest Plan goals and objectives, or Forest Plan targets.

Monitoring Results: Effects of other agencies or private landowners on National Forest Management are tracked largely through the "cumulative effects" analysis in National Environmental Policy Act (NEPA) documents for various projects across the Forest.

Management of the Beaverhead-Deerlodge National Forest is affected by a number of other agencies and private landowners in several arenas. The areas influenced the most are described below:

Threatened and Endangered Wildlife and Species of Concern - Decisions by the US Fish and Wildlife Service on listed species (bull trout, grizzly bear, bald eagle, trumpeter swans, and lynx) add both management standards and reporting requirements. The Westslope Cutthroat Conservation Agreement and Grayling recovery plans guide fish restoration efforts outside of listed fish species. We coordinate to the extent possible with the Montana State Elk Management Plan and State Comprehensive Wildlife Plan. In addition, a Memorandum of Understanding with Montana Fish Wildlife and Parks constrains treatment of sagebrush habitat on portions of the Forest.

Travel Management and Recreational Opportunities - decisions about travel by neighboring agencies (Dillon and Butte Field Offices of the BLM, Gallatin National Forest, and Yellowstone National Park) affect the balance of recreation opportunities our users expect from this Forest. Closures on other lands, whether private or public, can bring new users to this Forest. With new or increased use, user conflicts and resource conflicts can increase.

Fire Management – Adjacent ownerships and inholdings of private property influence management options for fire suppression, wildland fire use, fuel treatments and prescribed fire.

The Healthy Forest Restoration Act of 2003 (HR 1904) expedites the preparation and implementation of hazardous fuels projects on all federal land and assists rural communities, States and landowners in restoring healthy forest conditions on state and private lands.

Community assistance plans developed with counties and the State are identifying additional wildland/urban interface and opportunities for fuels treatments in urban interface areas adjacent to the Forest. The Madison County Strategic Wildland Fire Plan (2003) is an example of this cooperation. The Plan inventories and prioritizes fire hazards and problems in the count, and outlines a wide range of risk reduction strategies. Opportunities for intergovernmental cooperation are identified, and the National Fire Plan's emphasis upon community capacity-building is reflected. This plan incorporates the 2000 Big Sky Fire Management Strategy, also an interagency planning effort.

Coordination and cooperation across ownerships can enhance the Forest Service ability to protect high risk, high value areas. The ability to treat acres across boundaries and on private ownership contributes to long-term forest health, mitigation of large fires, reduction of suppression costs and greater firefighter and public safety.

Evaluation:

The Forest Leadership Team has not identified unacceptable impacts from other agencies or adjacent landowners.

Item 11-3: Emerging Issues

Activity: Emerging issues and changing social values.

Unit of Measure: N/A

Reporting Period: 5 years

Variability which would initiate further evaluation: Issues not resolved or adequately addressed by the Forest Plan.

Monitoring Results: An Analysis of the Management Situation document was released in December 2002 (FY03) to address changes since the 1986 Plan was written, specifically, those emerging or changing issues not adequately addressed by the Forest Plan. These will all be key issues in revising the Forest Plan. Please refer to that document (available at http://www.fs.fed.us/r1/b-d/) for a comprehensive discussion of this monitoring item.

Evaluation: Those new issues not resolved or adequately addressed by the Forest Plan include:

Travel Management - Demand for both motorized and non-motorized opportunities are increasing. Motorized access to remote areas is increasing due to technological advances in ATVs and snowmobiles. Conflicts around motorized use are increasing. The Statewide Off Highway Vehicle Amendment in 2001 restricted cross-country vehicle travel, changing the BDNF travel plan, and requiring subsequent travel planning.

Fire Management - Agency fire management policies have been through a significant change, particularly since 2000 when significant drought hit the West and large scale fires broke out in nearly every western state. The National Fire Plan (2001) acknowledged an environment of increasing risk to firefighters, rural communities (wildland urban interface), and resource values

(TES, water quality, air quality, soils, etc.) affected by wildland fire. Agency policy and direction for fire and fuel management has expanded significantly since.

Roadless Area Management - Public interest in roadless areas has shifted since the 1986 Plan was written. The Roadless Area Conservation Rule of 2001 is a reflection of national pressure to protect roadless lands in the National Forest System. The Rule has not been implemented to date because of legal controversy and process. However, the Chief of the Forest Service issued an Interim Directive for protection of roadless areas, part of which reserved decision authority for certain road construction and timber harvest activities in inventoried roadless areas to the Chief. The Directive also delegates to the Regional Forester certain responsibilities. As a result, little or no activity has taken place in inventoried roadless areas on the Forest since 2000. A re-inventory of roadless areas will take place during revision of the Forest Plan, noting those changes made since the 1986 Plan was written and accounting for areas with roadless values that should be included.

The Interdisciplinary Forest Plan Revision Team, confirmed by the Forest Leadership Team, has identified these as key topics to tackle during Forest Plan Revision.

Allocations

Item 12-1: Land Allocations

Activity: Evaluate lands identified as not meeting physical or biological characteristics within assigned MA.

Unit of Measure: Acres

Reporting Period: 5 years

Variability which would initiate further evaluation: ±15% change in acres considered suitable for range or timber management.

Monitoring Results: The allocations made in the 1987 Deerlodge Forest Plan are being re-evaluated through the Forest Plan Revision process, currently underway. Lands physically and biologically capable of supporting timber production were mapped in 2004 using Geographic Information Systems (GIS) technology and protocol outlined in regulations (36 CFR 219.14(a) and Forest Service Handbook 2409.13. Approximately 1,149,148 acres or 35% of the Beaverhead Deerlodge Forest were identified as tentatively suitable using this process.

Lands capable of supporting livestock grazing were also remapped according to regulation (36 CFR 219.20).

“Suitable” timber or grazing allocation will be made based on those lands previously determined to be physically and biologically capable of supporting those uses. Timber suitability and range suitability allocations vary depending on the alternative selected by the Forest Plan Record of Decision, due out in the winter of 2006.

Evaluation: Allocations of other lands to and from range and timber suitability did not change in 2004. No lands were identified as not meeting physical or biological characteristics used in

initial allocations in 1986. Instead, the question of whether allocations made in 1986 continue to be appropriate was focused on reallocating lands during the Forest Plan Revision process.

Item 12-8: FP Data Base

Activity: Assess and update Forest Plan data base as needed.

Unit of Measure:

Reporting Period: Annual

Variability which would initiate further evaluation: Any deviation

Monitoring Results: Major updates to the Geographic Information System and corporate data bases included:

Cultural sites **–** completed conversion of cultural site legacy data to digital format

Westslope Cutthroat Subbasin project **–** continued entry of genetic, population and habitat data in both spatial and tabular format.

Road and trail layers **–** annual updates to road location, condition and management objectives as part of the long term road inventory. Entry of trail location data for previously unmapped routes, some of them user created.

Evaluation: The BDNF continues to meet the Regional and National requirements for corporate data layers. Forest Plan data bases are being updated as needed

Appeals

Item 13-1: Appeals

Table 18 - Activity: 2004 Project/Activity Appeals.

Decision Under Appeal	Appellant(s)	Status
Antelope Basin / Elk Lake AMP's	Western Watersheds Project	Decision Affirmed
Antelope Basin / Elk Lake AMP's	Alliance for the Wild Rockies	Decision Affirmed
Antelope Basin / Elk Lake AMP's	Native Ecosystems Council	Decision Affirmed
Continental Divide National Scenic Trail – Fleecers	Continental Divide Trail Society	Appeal withdrawn by appellant
Continental Divide National Scenic Trail – Butte & Jefferson	Capital Vehicle Trail Association	Appeal withdrawn by

Decision Under Appeal	Appellant(s)	Status
Ranger Districts		appellant
Basin Creek Hazardous Fuels Reduction	Native Ecosystems Council	Decision Affirmed
Basin Creek Hazardous Fuels Reduction	Ecology Center	Decision Affirmed

Evaluation: No evaluation is required by the Monitoring Plan.

Deerlodge Forest Plan Monitoring Items

Summary

Monitoring Item, Title:

Observation

1-1, Actual use and condition of developed recreation facilities:

Results of actual recreation use and facility condition based on a 2000 survey were published in the FY03 Monitoring Report. The survey will be repeated on the Forest in 2005, providing trend data for managers.

1-2, Spectrum of dispersed recreation opportunities and uses:

No notable changes in Recreation Opportunity Spectrum have taken place since percentages were reported in FY03. The Revised Forest Plan will likely change the level of ROS projected when it's issued in late 2006.

1-3, ORV compliance and damage:

Whitetail Pipestone travel planning continues. Forest Plan Revision is the primary tool used in FY04 to improve travel allocations on the Forest.

1-4, Hunter recreation:

Virtually all of the Montana Fish Wildlife and Parks (FWP) Elk Management Units encompassing the Forest have reached or exceeded FWP population goals.

1-5, Actual condition of significant cultural sites:

One project was not in compliance with Section 106. Fifteen significant sites were monitored and all exhibit deterioration through natural weathering.

2-1, Change in the roadless resources:

No activity which would change roadless character (timber harvest, road construction, mining, etc) has taken place in roadless areas since 2000. Roadless areas were re-inventoried in 2004. The new inventory is shared with the public in 2005 with the Draft Forest Plan EIS for comment.

3-1, Wilderness trail conditions, visitor encounters, range trend and conditions, campsite impacts:

A 2004 compliance report for the Anaconda Pintlar Wilderness includes survey data on the self-issued mandatory registration, data on visitor encounters, campsite conditions, etc as outlined in

the new 2001 Plan. Data on compliance with Wilderness Management is also entered through the INFRA data system for the Anaconda Pintlar Wilderness area.

4-1, Seasonal distribution, movement patterns, population structure and density of elk, mule deer, moose and mountain goat populations:

See Beaverhead item 1-3

4-2, Evaluate habitat on the basis of topographic and physiographic features, vegetation and climate for elk, mule deer, moose and goat:

There are no indications from Montana Fish, Wildlife, and Parks that habitat is limiting big game populations.

4-3, Past, present, and future land use activities and their effect on the populations (includes livestock grazing, timber harvest, fire, vehicle use, mining and hunting):

No demonstrable adverse effects from Forest Service management on the maintenance of healthy ungulate populations.

4-4, Indicator species-elk/mule deer habitat effectiveness (cover/forage, open road density, and livestock impacts on elk habitat potential) by elk security analysis areas:

See Beaverhead Item 1-10. At the Forest and hunting district scale elk populations are robust and stable to increasing. Habitat effectiveness is not an issue under current management. Elk management has been hampered in the past by looking at too small a scale.

4-5, Indicator species-bighorn sheep habitat suitability:

Montana FWP has not informed the Forest Service of any habitat suitability issues.

4-6, Indicator species for vegetative communities:

There has been no explicit monitoring of these species. The Forest relies on the Northern Region Landbird Monitoring program for data and trends related to indicators in a number of vegetative communities.

4-7, Old growth habitat:

Old growth on the Deerlodge NF greatly exceeds plan standards.

5-1, Pools formed by instream debris and fish numbers (indicator species Cutthroat trout):

Evaluation of pool abundance does not indicate a statistically significant change. Where cutthroat populations have been monitored, many show a negative trend. The probable over-riding causes of decline are associated with reductions in habitat due to drought and competition by non-native trout.

5-2, Intragravel sediment and fish numbers:

Monitoring of stream function on the Forest indicates approximately 19% of our streams have reaches that are slightly impaired (functioning at risk) and 25% are impaired (non-functioning).

Forest data show some streams are recovering and others appear not to be recovering. Forest level monitoring of livestock grazing implementation indicates there appears to be failure to meet riparian standards in at least one pasture about 20% of the time. Recent re-evaluation of some slightly impaired and impaired streams, impacted by livestock grazing indicate an improving trend where standards are consistently met.

5-3, Aquatic invertebrate populations:

We have not conducted Aquatic Invertebrate Monitoring Over the past year.

6-1, Streamside cover for fish:

Monitoring of stream function on the Forest indicates approximately 19% of our streams have reaches that are slightly impaired (functioning at risk) and 25% are impaired (non-functioning). Forest level monitoring of livestock grazing implementation indicates a failure to meet riparian standards in at least one pasture about 20% of the time. Recent re-evaluation of some impaired, impacted by livestock grazing indicate an improving trend where standards are consistently met

6-2, Riparian rehabilitation:

No riparian rehabilitation was conducted on the Forest in 2004.

7-1a, Utilization of forage in transitory range:

2056 acres of seedlings were monitored in 2004. 178 acres showed cattle damage and 129 acres showed game damage.

7-1b, Percent of available forage utilized by livestock:

Actual use is 77% of the capacity projected by the Deerlodge Forest Plan

7-2, Allotment Management planning and update:

No allotment management planning was conducted in 2004. Forest Plan Revision continued in 2004 that addresses needed changes in standards.

7-3, Weed infestations:

On the Beaverhead-Deerlodge Forest as a whole, 8004 acres of noxious weeds were treated in 2004. The Forest far exceeded noxious weed treatment acres scheduled in the Forest Plans.

7-4, Condition and trend of range; and forage availability:

Some isolated trend monitoring transects were established and are reread but they are not tied to acres.

7-5, Permit compliance:

Of the 56 allotments inspected 47 were in compliance and 9 did not meet the standards.

8-1, Regulated volume prepared for sale:

Volume offered for sale is within the Allowable Sale Quantity (ASQ). Total volume offered was 4.8 MMBF.

8-2, Timber assumptions; volume, condition, class, logging, acres harvested:

Volume/acre yields are higher then Forest Plan estimates for timber sales which reduced the number of acres harvested.

8-3, Silvicultural assumptions and practices:

Uneven and even-aged management satisfactorily applied to elk winter range and riparian areas. All stands are within current rotation age and culmination of mean annual increment (CMAI).

8-4, Size of openings:

Size of openings increased on several projects where warranted.

8-5, Regenerated yield projections:

In 2004, no growth plots were re-measured.

8-6, Reforestation practices and assumptions:

Regeneration was obtained within 5 years of regeneration cut. Planting targets are being met.

8-7, Timber stand improvements and assumptions:

Timber stand improvement thinning program has been reduced by 75% on the NF due to the listing of Lynx as a T & E Species.

8-8, Lands suitable for timber production:

There have not been measureable changes in the acreage of suitable lands over the last 10 years. A Forest-wide re-analysis of tentatively suitable timber land is being conducted in FY03 and FY04

9-1, Monitor for compliance with local, State and Federal water quality standards:

Monitoring of a timber harvest on the Butte Ranger District show we met BMPs that ensure beneficial uses of water are protected.

9-2, Riparian rehabilitation projects:

During 2004, no riparian rehabilitation projects were completed.

9-3, Productivity changes in sensitive soils:

Forest and rangeland soils were sampled to compare compaction before and after management activities take place. Although the results are inconclusive, they will be added to a growing database that will enable us to further evaluate the relationship between bulk density and penetrometer measurements and their usefulness for monitoring purposes.

9-4, Insure availability of adequate water to maintain management options, water rights:

Water rights are being adjusted to ensure availability of water supplies for appropriate management**.** Changes in water rights are being tracked through the appropriate agencies and data bases.

10-1, Forest Service allocations that may have an effect on minerals activities; minerals activities that have an effect on surface resources:

This item was not reported on in 2004.

11-1, Acres and volumes of insect and diseases infestations:

Mountain pine beetle infestations, in particular, are growing. Projects were initiated to salvage dead wood and treat areas where human developments or municipal watersheds were threatened by dense, dry fuels. The Basin Creek EIS attempted to reduce mountain pine beetle losses in the Basin Creek drainage south of Butte. Thompson Park EA was initiated to deal with mountain pine beetle losses east of Butte.

11-2, Air quality:

State and Federal air quality standards met.

11-3, Fuel treatment outputs:

We accomplished 13,933 acres of fuel treatment across the Forest in 2004 with a target of 6,145 acres. The primary emphasis over the last 4 years for treatment is the wildland urban interface and areas in high risk fire regimes or condition classes.

11-4, Wildfire acres:

In FY04 166 acres burned on the Deerlodge side of the forest.

11-5, Cost of suppression, protection organization and net value change:

The fire management program for FY04 was funded at approximately 80% of the Most Efficient Level. The Forest met or exceeded targets associated with that level of funding.

12-1, Local roads in place and collector roads constructed:

No new permanent (system) roads were constructed; 21.9 miles of existing roads were reconstructed on the BDNF.

12-2, Road management:

There are approximately 110 miles of National Forest System Roads closed year-round to standard highway vehicles, and 695 miles closed seasonally.

13-1, Verification of unit cost used in plan compared to on-the-ground cost:

This item was not reported on in 2004.

14-1, Effect of National Forest management on land, resources, and communities adjacent to the National Forest:

The Beaverhead-Deerlodge National Forest contributed approximately 1,739 jobs and $47 million in labor income to the 8-county area. This amounts to 3.8% of the employment and 4.4% of the areas labor income.

14-2: Effect of management on adjacent lands and effects of other Government agencies (State, Federal, Local) activities on the National Forest:

Other agencies and private landowners continue to affect BDNF management, particularly in the arenas of threatened or endangered wildlife and species of concern, travel management and fire management.

15-1, Effects of emerging issues or changing social values:

Fire management, travel management and roadless management are three key topics that will be re-evaluated during Forest Plan Revision.

15-2, Evaluate lands identified as not meeting physical or biological characteristics used in initial allocation:

The question of whether allocations made in 1987 continue to be appropriate is being reevaluated during the Forest Plan Revision process.

16-1, Determine needed research for National Forest Management:

The Region 1 1996 Natural Areas Assessment identified several vegetation types that could fulfill a need for Research Natural Area designation on the B-D N.F.

Lemhi penstemon *Penstemon lemhiensis*, a rare local endemic, is thought to be declining. Research on the disturbance ecology and pollinator habitats of this species is needed. In addition, whitebark pine blister rust and decline of aspen stands is triggering the need for more knowledge.

Recreation

Item 1-1: Actual Use and Consideration of Developed Recreation Facilities

Activity: Check projection accuracy; monitor closeness of actual use to capacities; check if maintaining developed facilities to maintain existing capacity and standards.

Unit of Measure: RVDs, PAOT

Reporting Period: Annual

Variability which would initiate further evaluation: ±20% difference between projected and actual use; capacity +10%; loss of 20% of developed facility capacity.

Monitoring Results: The Forest Service has transitioned form the old Recreation Inventory Management System which measured in Recreation Visitor Days (RVDs) to the National Visitor Use Monitoring (NVUM) survey which measures participation in activities in recreation visits. The NVUM survey also provides data on visitor expenditures and visitor satisfaction with the condition of facilities

The NVUM baseline survey was conducted on the Beaverhead-Deerlodge in 2000. The Forest's results were published in the FY03 Monitoring and Evaluation Report and are also available at http://www.fs.fed.us/recreation/programs/nvum/. NVUM reports 1,057,000 visits to the Forest. A visit on the BDNF averages 21.7 hours, according to the survey. The combined Beaverhead and Deerlodge Forest Plan projections based on RIM were for 1,540,000 visitor days.

Evaluation: Because of the shift from visits to visitor days, it is very difficult to assess if actual use varies more than 20% from projections made in the Forest Plans. Because NVUM has been adopted nationwide and offers a much superior statistically supported methodology, this will become the new base for the Forest to monitor trends and visitor satisfaction. The 5-year survey is being repeated on the Forest in 2005. Trends in visitor use, spending and satisfaction should be available to us late in 2006.

Item 1-2: Spectrum of Dispersed Recreation Opportunities and Uses

Activity: Insure maintenance and enhancement of a wide variety of recreation opportunity settings and VQO mixes.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: ±10% of projected base by ROS preference type.

Monitoring Results: The current distribution of recreation opportunity spectrum (ROS) classes was mapped in 2003 in conjunction with Forest Plan Revision efforts. For current levels of ROS, consult the FY03 Monitoring and Evaluation Report, available online at http://www.fs.fed.us/r1/b-d/

Evaluation: ROS acres were calculated for Forest Plan Revision using a different land base than earlier monitoring reports, so a direct comparison of shifts in percent cannot be made. The DEIS for Forest Plan Revision will disclose changes in classes from inception of the Forest Plan in 1987 to Present. The Revised Forest Plan (due out in late 2006) will also set new objectives for recreation opportunities which will replace those measured by this monitoring item

Item 1-3: ORV (Off Road Vehicles) Compliance and Damage

Activity: Insure travel plan updates are realistic, understandable and enforceable; travel plan adequately protects the resources and meets assigned prescriptions of the Plan.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: ID Team or District review indicates unacceptable resource damage from ORV use, an unenforceable situation, or use conflicts with management goals for the Management Area.

Monitoring Results: Changes in travel management in FY04 were limited to the Whitetail Pipestone travel planning project, expected to be completed in FY05. Forest budgets limit the number of area specific travel planning efforts that can take place in any one year. We are using Forest Plan Revision as a more cost effective way of considering alternative travel allocations on a broader scale.

Evaluation: Review does not indicate unacceptable resource damage or conflicts that are not already being dealt with. Current Travel Plan efforts are intended to protect the resource and meet prescriptions of the Forest Plan. Alternatives being proposed through Forest Plan Revision are intended to facilitate travel plan compliance and project decisions.

Item 1-4: Hunter Recreation

Activity: Check the adequacy of cover and road closure combinations to provide season-long hunter opportunity.

Unit of Measure: % of bull elk harvested

Reporting Period: Annual

Variability which would initiate further evaluation: When bull elk harvest in any hunting district exceeds 40% during the first week of hunting season consistently (3 years in a row).

Monitoring Results: Montana Fish, Wildlife & Parks (FWP) herd composition & population counts and the State Elk Plan (FWP 2004, table 9) indicate BDNF is the most heavily hunted area in the State. Elk numbers have increased. Virtually all of the FWP Elk Management Units

encompassing the Forest have reached or exceeded FWP population goals. FWP has instituted either sex elk harvest in 2004 and 2005 to reduce numbers on almost all elk hunting districts that encompass the BDNF.

Evaluation: FWP monitoring (2004) shows all elk management units meeting or exceeding objectives for population, hunter numbers, and hunter recreation days.

Item 1-5: Actual Condition of Significant Cultural Sites

Activity: Actual condition of significant cultural sites; monitor deterioration and/or vandalism to National Register eligible or listed sites.

Unit of Measure: Project

Reporting Period: Annual

Variability which would initiate further evaluation: Vandalism evident at 10% of sites; deterioration which threatens cultural integrity at any National Register eligible site; less than 100% of all projects in compliance with Section 106.

Monitoring Results: One project was not in compliance with Section 106. Fifteen significant sites were monitored and all exhibit deterioration through natural weathering

Evaluation: The District Ranger was reminded about the requirements of Section 106. No site damage resulted from the project being out of compliance. The Heritage Program has neither the staff nor the funding to stabilize all significant sites; over time significant cultural sites will continue to deteriorate due to lack of capacity to manage them all to appropriate standards.

Roadless

Item 2-1: Change in the Roadless Resource

Activity: Compare the acres and distribution of the roadless resource with that projected.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: Loss of 10% of roadless resources from Forest Plan projections.

Monitoring Results: The 1983 roadless inventories for the Beaverhead and Deerlodge Forest were updated in 2004 as part of the Forest Plan revision process. Additions and deletions to existing roadless areas and addition of new areas were based upon criteria in the FSH 1909.12 “Inventory and Evaluation of Roadless Areas” and the Beaverhead-Deerlodge “Process for Roadless Reevaluation (January 2004).

During the 2004 inventory, roadless areas were mapped and acres calculated using Geographic Information Systems (GIS) technology. Digitizing old boundaries and recalculating road buffers

resulted in some acre changes. In addition, District specialists mapped out areas where activities like roading, timber harvest or mining have changed the roadless character since 1983. They also added areas that were either overlooked in the earlier inventories or have regained roadless character through road obliteration or passage of time. These changes in the inventory are being shared with the public for input and additional review.

New areas identified include:

Middle Creek Addition to Garfield Mountain (Dillon Ranger District)

Cowboy Heaven (Madison Ranger District

Madison Range Additions (Madison Ranger District)

Lost Creek (land exchange on Pintlar Ranger District)

Two areas from the Beaverhead unit were suggested for elimination from the inventory. A roadless area must have at least 5,000 acres or be contiguous to an existing wilderness area to be included in the roadless area inventory. **Beaver Lake Unit 1-003B** and **Dixon Mountain Unit 1-019** are both well below 5,000 acres. The potential of these two areas for wilderness or providing values associated with roadless criteria was evaluated in case a high value might require special consideration. Both areas rated far below the breakpoint for consideration as recommended wilderness (8.9 and 13.1 points out of 40, respectively).

Evaluation: Currently, development of roadless areas is far less than the Forest Plan predicted so further evaluation is not required. Only 1% of the total acres projected for development of the Forest Plan were actually developed by the end of the first decade. National pressure to protect roadless lands in the National Forest System manifested as the Roadless Area Conservation Rules of 2001 and 2005. With this shift in public interest, the Forest Service has been managing roadless areas under an Interim Directive from the Chief of the Forest Service since 2000. This Directive has resulted in little or no activity taking place in inventoried roadless areas on the BDNF since 2000.

The 2004 roadless inventory (subject to change before the Final EIS is published in 2006) shows an increase from 1,662,569 to 1,858,615 acres. The increase is largely due to the addition of the four areas described above.

Wilderness

Item 3-1: Trail Conditions, Visitor Encounters, Range Trend and Conditions, and Campsite Impacts

Activity: Achieve high level of wilderness recreation experience and maintain high quality wilderness resource.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: 10% deviation from management plans is acceptable, any ecosystem damage

Monitoring Results: An extensive 2004 year-end report for the Anaconda Pintlar Wilderness addresses compliance with the 2001 Anaconda Pintlar Wilderness Plan. The report includes survey data on the self-issued mandatory registration, as outlined in the 2001 Plan, data on visitor encounters, campsite conditions, etc. The report is in the files at the Philipsburg Ranger District. Data on compliance with Wilderness Management is also entered through the INFRA data system for the Anaconda Pintlar Wilderness area. This data is available on request from the Philipsburg, Wise River or Madison Ranger Districts.

Evaluation: No evaluation of the data was available for this report.

Wildlife

Item 4-1: Seasonal Distribution, Movement Patterns, Population Structure and Density of Elk, Mule Deer, Moose and Mountain Goat Populations.

Activity: Identify ungulate population segments and yearlong range of each segment in the Elkhorns.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: ±20% from previous measurements.

Monitoring Results: Populations are stable to increasing for all species. For more detailed numbers see BDNF Forest Plan Monitoring and Evaluation Report, FY03. Also see Beaverhead item 1-3. The Elkhorns unit is managed by the Helena NF under agreement with the Beaverhead-Deerlodge NF.

Evaluation: Big game populations for all species are robust at this writing. No further evaluation required.

Item 4-2: Habitat

Activity: Evaluate habitat on the basis of topographic and physiographic features, vegetation and climate for elk, mule deer, moose, and goat to determine preference by species of wildlife.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: ±20% from previous measurements.

Monitoring Results: See Beaverhead item 1-3 for data on species and numbers. Big game populations are robust. Montana FWP has identified specific habitat as seen below on broad

scale maps at http://fwp.state.mt.us/hunting/planahunt/default.aspx. Big game populations are well distributed across the Forest.

Evaluation: We have not evaluated trends in habitat specifically for these game species but there are no indications from FWP that populations of elk, moose, mule deer or bighorn sheep are limited by habitat.

Item 4-3: Effects of Land Use Activities

Activity: Evaluate response to past, present, and future land use activities (includes livestock, grazing, timber harvest, fire, vehicle use, mining and hunting) by various ungulate populations and the effect on populations.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: ±20% from previous measurements.

Monitoring Results: In 2004 there were no projects implemented or proposed that created threats to the viability of any ungulate population on the Forest. All NEPA documents include analysis of effects to big game species as appropriate. Elk analyses predominate. On all projects, attempts are made to mitigate effects such that no significant reduction in the quantity or quality of wildlife habitat occurs. As reported in items 4-1 and 4-2, ungulate populations on the Forest are stable or growing.

Evaluation: Montana Fish Wildlife and Parks manages and monitors ungulate populations. They have not indicated that land use activities are detrimentally impacting ungulate populations by more than 20%. No further evaluation is required.

Item 4-4: Indicator Species-Elk/Mule Deer Habitat Effectiveness

Activity: Evaluate effectiveness of elk and mule deer habitat (cover/forage, open road density, and livestock impacts on elk habitat potential) by elk security areas to be able to respond to any unacceptable deviation from past measurement.

Unit of Measure: Varied

Reporting Period: Bi-annual

Variability which would initiate further evaluation: -20% from previous measurements.

Monitoring Results: The single most important factor in habitat effectiveness is open, motorized roads/trails. The 70% habitat effectiveness (HE) level HE elk equates to slightly less than 1.0 miles/sq mi of open motorized roads/trails. Current road densities appear as follows:

Table 19 - Open road and trail density by hunting unit.

Hunting Unit	Beaverhead-Deerlodge Open Roads/Trails by FWP Hunting Unit During Fall Hunting Season

	Open Road Density	Open Trail Density	Total Open Density
	Miles / Miles2	Miles / Miles2	Miles / Miles2
210	0.8	0.1	0.9
211	0.5	0.2	0.6
212	1.3	0.1	1.4
213	1.2	0.5	1.7
214	1.4	0.4	1.8
215	1.4	0.1	1.6
216	0.5	0.2	0.7
300	0.6	0.1	0.6
302	1.0	0.1	1.1
311	0.0	0.0	0.0
318	1.8	0.2	2.0
319	0.6	0.1	0.7
320	0.7	0.1	0.8
321	1.0	0.3	1.3
323	0.4	0.1	0.5
324	0.4	0.0	0.5
327	0.6	0.2	0.8
328	0.7	0.1	0.9
329	0.8	0.1	0.9
330	0.5	0.1	0.7
331	1.2	0.2	1.3
332	0.5	0.3	0.8
333	0.6	0.4	1.0
340	1.1	0.4	1.5

Hunting Unit	Beaverhead-Deerlodge Open Roads/Trails by FWP Hunting Unit During Fall Hunting Season		
	Open Road Density	Open Trail Density	Total Open Density
	Miles / Miles2	Miles / Miles2	Miles / Miles2
341	0.5	0.0	0.5
350	1.1	0.2	1.3
360	0.0	0.0	0.0
362	0.0	0.0	0.0
370	0.8	0.1	0.9

Eleven of 29 hunting districts exceed 1.0 mi/sq mi of open motorized roads/trails during the fall hunting season. This is the period when elk are subjected to the most disturbances. Four hunting units exceed 1.5 mi/sq mi which equates to approximately 50% HE. This is the minimum HE recommended by Christensen et al (1993) where elk are one of the primary resource considerations.

Evaluation: The elk effective cover analysis and elk security standards presented in the 1987 Plan are fraught with problems (Deerlodge Forest 5 Year Review (1988-1994) and Analysis of the Management Situation (2002)) and will be modified during Forest Plan Revision. However, the intent of this monitoring item is to assure secure habitat for elk. Using current road density measurements and elk population levels as an indicator, that security is being provided. At the hunting district scale, there is little need for concern about adequate habitat effectiveness based on open motorized roads/trails. As discussed in Beaverhead items 1-1 & 1-3 elk populations are very robust across the Forest.

Item 4-5: Indicator Species-Bighorn Sheep-Habitat Suitability

Activity: Evaluate bighorn sheep habitat suitability to be able to respond to any unacceptable deviation from past measurement.

Unit of Measure: Variable

Reporting Period: Annual

Variability which would initiate further evaluation: -20% from previous measurements.

Monitoring Results: The Big Horn Sheep population is stable and is estimated at 458. There are two bighorn sheep herds with sub populations that use the Deerlodge Forest seasonally. The State has only three hunting districts for sheep that encompass portions of the Forest. Garrison, South Flint (Lost Creek herd) and the Highlands. In 2003, the Forest Service acquired the R-Y

timber lands around Georgetown Lake. This acquisition may provide more opportunities for habitat for the Lost Creek sheep herd.

Evaluation: Habitat suitability for bighorn sheep has not been evaluated by the Forest Service. There are no base measurements to compare changes in suitability to. However, the State has not informed the Forest Service of any habitat suitability concerns for bighorn sheep. Forest Service biologists rely on survey results from Montana FWP.

Item 4-6: Indicator Species for Vegetative Communities

Activity: Evaluate the following communities to respond to any unacceptable deviation from past measurement:

Table 20 – Indicator species by vegetative community type

Vegetative Community	Indicator Species
Lodgepole Pine	Hairy Woodpecker (Dendrocopus villosus)
Mountain Grassland	Mountain Vole (Microtus montanus)
Evergreen Shrub	Sage Thrasher (Oreoscopkes montanus)
Riparian: Shrub	Belted Kingfisher (Megaceryle alcyon, Willow Flycatcher (Empidonax traillii)
Riparian: Tree	Northern Water Shrew (Sorex palustris), Warbling Vireo (Vireo princeps)
Riparian: Wet Meadow	Western Jumping Mouse (Zapus princeps)
Riparian: Marshland	Blue-winged Teal (Anas discors)

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: 20% from previous measurements.

Monitoring Results: The Forest no longer explicitly monitors the individual species listed above. Instead, the Northern Region of the Forest Service developed an active bird monitoring program to support Forests across Montana and northern Idaho. The Landbird monitoring program was initiated region wide to help biologists and managers better understand habitat relationships of landbirds breeding in this region. The program helps Forests meet their legal mandates to monitor populations of “indicator” species in order to maintain viable populations of native vertebrates. The objectives, specifically, are to monitor the long term population and distribution trends, assess habitat relationships via permanent survey points, and conduct effectiveness monitoring of selected management practices.

Transects were established on the Beaverhead-Deerlodge Forest in 1994 (65 transects) and reread in 1995 (85 transects), 1996 (52 transects), 1998 (30 transects, 2002 (30 transects), and 2004(32 transects). Habitat relationship models are now available for 83 bird species as is a list of the most commonly detected bird species in each of twenty major cover types, including disturbed cover types like partially cut forest, clearcuts and post-fire forests. Data results are available at http://www.avianscience.org/research_landbird.htm.

Evaluation: We do not know if populations of these species have varied more than 20% because the Forest Plan did not establish a baseline against which to monitor changes in these species. That baseline is available now for the bird species on this list.

The Deerlodge Forest five year evaluation and monitoring report, 1994, discusses in detail this monitoring item and its drawbacks. Not only were baselines not established, but the scientific literature shows it has been difficult to establish a cause and effect relationship between habitat and MIS population levels. As with threatened, endangered and sensitive species, we attempt to minimize potential negative effects through project alternative development, mitigation measures or habitat improvement projects.

Item 4-7: Old Growth Habitat

Activity: Evaluate the following communities to identify deviation from past measurement.

Table 21 – Indicator Species by vegetative community.

Vegetative Community	Indicator Species
Old Growth Habitat	Goshawk (Acipitor Gentilus), Northern 3-toed Woodpecker (Picoides tridactylus)
Pintlar District: Douglas-fir	Piliated Woodpecker (Oryocopus Pileatus)

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: -20% from previous measurements.

Monitoring Results: As noted at item 1-11, all landscapes across the Forest contain large amounts of old growth habitat. The FIA minimum per cent old growth by Deerlodge landscape is 11% in the Upper Clark Fork landscape to a maximum of 31% in Upper Rock Creek. Deerlodge standards call for 5% old growth by compartment. While FIA does not produce data at the compartment scale, it is evident that current old growth dramatically exceeds plan standards at the landscape scale.

Evaluation: We have not deviated more than 20% from previous old growth measurements. The maintenance of old growth on the Deerlodge NF greatly exceeds plan standards. No further evaluation required.

Fish

Item 5-1: Cutthroat Trout

Activity: Evaluate pools formed by instream debris and fish numbers to insure that our management practices do not decrease instream cover or fish numbers.

Unit of Measure: Number of pools formed by instream debris per 1000 ft.

Reporting Period: Annual

Variability which would initiate further evaluation: Decrease in pools by 10% and statistically significant reduction in fish numbers (90% confidence).

Monitoring Results: Westslope Cutthroat Trout

From 2001 - 2004 we intensively inventoried streams to gather WCT population and habitat data and collect samples for genetic analysis in preparation for Subbasin planning. About 359 streams were electrofished across the analysis area, providing data representative of approximately 724 miles of stream.

Describing current WCT distribution is complicated by an abundance of populations with varied levels of genetic purity. The question is, at what point has a hybridized individual/population become sufficiently altered so that it no longer has value from a WCT conservation standpoint? Using specific criteria outlined by Shepard et al. (2002) in conjunction with the data we gathered allowed us to designate Conservation Populations on the Forest. These are genetically unaltered; or hybridized with ecological attributes of significance.

The conservation populations we identified occupy about 1,280 stream miles, representing approximately 14% of historically occupied stream miles within the Forest.

Currently draft Westslope Cutthroat Subbasin plans are done for the Big Hole, Beaverhead, Red Rock, and Madison drainages. The Ruby plan is done in part and the data summarization is completed for the Boulder.

Table 22 - Distribution of Conservation and Non-Conservation Populations by River Drainage

River Drainage (4th Hydrologic Unit Code)	Conservation Populations	Approximate Non-Conservation Populations
Beaverhead	18	7
Big Hole	48	27
Boulder	6	1
Jefferson	7	2
Madison	9	20

River Drainage (4th Hydrologic Unit Code)	Conservation Populations	Approximate Non-Conservation Populations
Red Rock	40	22
Rock Creek	8	5
Ruby	16	19
Upper Clark Fork	21	25
TOTAL	173	128

Evaluation: Pools - Our monitoring does not show a definitive change in pool abundance, but we only inventory where suitable habitat exists. Drought conditions are reducing suitable habitat and so natural weather patterns are undoubtedly influencing pool abundance at some level.

Fish Numbers - Declines in westslope cutthroat trout (WCT) are apparent, further evaluation is required. The declines in WCT populations throughout the fish's historic range in the Upper Missouri river basin have been recognized for years. Unfortunately, changes in population densities do not show a statistical correlation with habitat conditions. Management effects must still be considered, but we are not observing a dependable relationship between changes in habitat quality and population declines. The probable over-riding causes of decline are associated with reductions in habitat due to drought and competition by non-native trout.

The BDNF has responded to WCT declines in two ways. We have modified Forest Plan direction by incorporating the Short Term Strategy for Westslope Cutthroat Trout into our Riparian standards since 1998. Stream function and fish habitat have shown improvement with application of the new riparian standards (See item 2-3). We have also intensified inventory and genetic testing couple with development of Subbasin Plans for conservation and restoration.

Item 5-2: Intragravel Sediment and Fish Numbers

Activity: Insure that our management practices do not degrade spawning and rearing habitat for cutthroat trout, validate sediment response model.

Unit of Measure: Percent of material less than ¼" diameter in the substrate.

Reporting Period: Annual

Variability which would initiate further evaluation: Increase in the fines (less than 6.3 mm diameter) to a depth of 8 inches (80% confidence). 10% reduction in fish numbers attributable to sediment increase.

Monitoring Results: Loss of stream function is related to widened stream channels and reduced access to the flood plain. These characteristics lead to increased channel erosion and fine sediment on the stream bottom. Monitoring of stream function on the Forest indicates approximately 19% of our streams have reaches that are slightly impaired (functioning at risk) and 25% are impaired (non-functioning).

Forest data show some streams are recovering and others appear not to be recovering. Forest level monitoring of livestock grazing implementation indicates there appears to be failure to meet riparian standards in at least one pasture about 20% of the time. Recent re-evaluation of some slightly impaired and impaired streams, impacted by livestock grazing indicate an improving trend where standards are consistently met. Reductions in levels of fine sediment are occurring in some areas, but not in others.

Evaluation: We do not have data to address the increase in sediment or decrease in fish numbers to the statistical level required by this item. There are several things we do know from stream surveys and riparian standard compliance reviews, however. Where cutthroat populations have been monitored, many show a negative trend. Unfortunately, changes in densities do not show a statistical correlation with habitat conditions (in this case sediment increases). Population trends can seldom be related to a single cause, because many factors influence fish abundance. Management effects must still be considered, but we are not observing a dependable relationship between changes in habitat quality and population declines. The probable over-riding causes of decline are associated with reductions in habitat due to drought and competition by non-native trout.

Item 5-3: Aquatic Invertebrate Populations

Activity: Where fish populations are monitored, assist in the analysis of causative mechanisms responsible for fish population fluctuation. Where fish populations are not monitored, provide an index of relative changes in the biological health of the stream community affected by land management treatments.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: Significant alteration of the aquatic invertebrate community structure.

Monitoring Results: We have not conducted Aquatic Invertebrate Monitoring Over the past year.

Evaluation: No monitoring results.

Riparian (All Resources)

Item 6-1: Streamside Cover for Fish

Activity: Evaluate streamside cover for fish; willow communities; forage utilization and stream bank trampling. Assure management activities do not degrade the habitat of riparian dependant species.

Unit of Measure: Percent overhead cover and percent stream bank stability.

Reporting Period: Annual

Variability which would initiate further evaluation: ±15% variance in utilization; in range condition and trend. ±20% variance in stream bank cover and composition; more than 10% of the stream bank showing damage.

Monitoring Results: Streamside cover for fish is influenced directly by the condition of riparian areas and stream channels. Where there is impairment of channel condition, there nearly always is a concurrent reduction in riparian condition. Monitoring of stream function on the Forest indicates approximately 19% of our streams have reaches that are slightly impaired (functioning at risk), 25% are impaired (non-functioning) and 56% are functioning.

Forest data show some streams are recovering and others appear not to be recovering. Forest level monitoring of livestock grazing implementation (Beaverhead-Deerlodge National Forest 2004 Range Review, File designation 2210/2230, January 2005) indicates a failure to meet riparian standards in at least one pasture about 20% of the time. Recent re-evaluation of some impaired streams, impacted by livestock grazing, indicates an improving trend where standards are consistently met. See Beaverhead Item 2-3 for a discussion of management effects on riparian habitat.

Evaluation: The parameters measured during 2004 stream monitoring don't allow a direct examination of whether further evaluation is required for this item. However, 86% of the streams surveyed exhibited upward trends in condition (see Beaverhead Item 2-3).

Item 6-2: Riparian Rehabilitation

Activity: Monitor riparian recovery of areas that received rehabilitation treatments.

Unit of Measure: Projects.

Reporting Period: Annual

Variability which would initiate further evaluation: Less than 90% success in recovery to a good or excellent condition within 5 years after treatment commences.

Monitoring Results: Riparian rehabilitation was not conducted on the Forest in 2004.

Evaluation: No evaluation possible.

Range

Item 7-1a: Utilization of Forage in Transitory Range

Activity: Determine correlation between level of forage utilization and damage to tree seedlings.

Unit of Measure: % seedling damage.

Reporting Period: 1, 3, 5 years after reforestation, as per established schedule 100% of exams in allotments and areas requiring reforestation.

Variability which would initiate further evaluation: 95%+ correlation between levels of forage utilization and plantation failure.

Monitoring Results: A total of 2056 acres of seedlings were monitored in 2004. Of those, 178 acres showed cattle damage and 129 acres showed game damage. Seven percent of the inventoried acres showed cattle damage and 5% showed game damage.

Evaluation: No correlation was established between forage utilization and plantation failure.

Item 7-1b: Percent of Available Forage Utilized by Livestock

Activity: Determine actual use by livestock and if utilization constraints of Forest Plan are met.

Unit of Measure: Percent of available forage utilized by livestock.

Reporting Period: 5 years, 100% of inspections records and utilization studies.

Variability which would initiate further evaluation: ± variance over a sustained (3 yr.) period.

Monitoring Results: Actual use by cattle on Deerlodge allotments in 2004 was 37,617 head months of cattle or 49,654 animal unit months.

Evaluation: Actual use is 77% of the capacity projected by the Deerlodge Forest Plan. This generally considered a more realistic level of forage production than the 1987 plan estimate. Loss of transitory forage and conifer encroachment are contributing factors as is application of riparian standards required for protection of bull trout.

Item 7-2: Allotment Management Planning and Update

Activity: Insure update at 15 year intervals; plan is being adhered to, management objectives are being met, improvements are being maintained.

Unit of Measure: Number of Plans updated.

Reporting Period: Annual

Variability which would initiate further evaluation: Less than 4 plans updated annually, planned objectives are not being met.

Monitoring Results: No allotment updates were completed on the Deerlodge portion of the Forest in FY04.

Evaluation: Fewer than the 4 scheduled plan updates were completed on the Deerlodge zone. All planning resources have been directed towards the Beaverhead Lawsuit Settlement Agreement. We anticipate that new allotment planning efforts will begin in FY06 on the Deerlodge portion of the Forest.

Item 7-3: Weed Infestations

Activity: Monitor weed infestation, effectiveness of control measures, activities responsible, implementation of IPM techniques.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: Noxious weeds increase distribution by 5%; other weedy species by 10%; infestations appear in previously unaffected areas.

Monitoring Results: On the Beaverhead-Deerlodge Forest as a whole, 8004 acres of noxious weeds were treated in 2004. The Deerlodge Forest Plan scheduled 1575 acres of treatment per year.

Evaluation: Noxious weeds have increased in distribution by more than 5% since 1987. The Forest far exceeded noxious weed treatment acres scheduled in the Forest Plans. In an effort to deal with expanded weed problems, the 2002 Noxious Weed decision updated the Forest Plan treatment authority, envisioning treatment of 16,000 acres per year with the assistance of aerial treatment. This level of treatment has not been reached during any of the years since it was implemented.

Item 7-4: Range Condition and Trend

Activity: Identify decline in range condition and condition and trends, recommend changes in management strategies or stocking levels. Determine any shift away from grass aspects due to conifer or shrub encroachment.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: 5% increase in acres with downward trend or a 5% decline in acres by condition class; 5%decline in acres with a grass aspect; 5% conversion of grass/brush to a conifer overstory.

Monitoring Results: None to report

Evaluation: A systematic long term trend monitoring system is needed. Forest personnel commenced research on a long term trend monitoring program in 2004.

Item 7-5: Permit Compliance

Activity: Insure livestock use complies with range readiness, proper utilization and permit requirements.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: ±10% change from annual plan.

Monitoring Results: In FY 2004, 56 out of 92 allotments were inspected to determine if forage utilization standards were being met.

Evaluation: Of the 56 allotments inspected 47 were in compliance and 9 did not meet the standards. This exceeds the 10% variance from annual plans. In FY03, compliance was within the 10%. Riparian standards are the ones most often exceeded. Range readiness, upland utilization or winter range utilization are seldom problems. The Forests annual Interdisciplinary Range Review is scheduled and designed to improve our ability to implement riparian guidelines effectively.

Timber

Item 8-1: Regulated Volume Prepared for Sale

Activity: Insure that the volume offered and/or sold does not exceed the Allowable Sale Quantity (ASQ) for the 10-year period.

Unit of Measure: MMBF

Reporting Period: Annual

Variability which would initiate further evaluation: Cumulative values for Plan period are 10% over the cumulative average annual Allowable Sale Quantity (ASQ).

Monitoring Results: Tables 23 through 26 display the timber sale program and harvest data for Fiscal Years 1988-2004, as well as the projected Forest Plan outputs for this monitoring item.

Table 23 - Timber Sale Program (Million Board Feet)

Year	Volume Sold	Volume Offered but not sold	Volume Appealed	Volume Sold From Previous Years Sales Programs	Total
1988	19.6	0.3	0	0	19.9
1989	22.1	1.0	0	4.6	26.7
1990	5.5	3.9	0	7.9	17.3
1991	3.3	3.0	0	4.2	10.5
1992	3.6	6.9	0	4.6	15.1
1993	3.0	0	0	6.9	9.9
1994	6.3	0	0	4.2	10.5
1995	4.1	6.4	0	0	10.5
1996	2.6	7.8	0	6.4	16.8
1997	7.4	6.1	0	13.2	19.3

Year	Volume Sold	Volume Offered but not sold	Volume Appealed	Volume Sold From Previous Years Sales Programs	Total
1998	8.8	1.3	0	6.0	16.1
1999	1.8	0	4.5	1.2	7.5
2000	2.9	0	0	0	2.9
2001	2.4	0	2.0	0.2	4.6
2002	2.9	0	1.6	0	4.5
2003	2.6	0	0	0.3	2.9
2004	4.8	0	0	3.2	8.0
A/Y	6.1	2.2	0.5	3.7	11.9

(1) The summary shown above consists of chargeable live and dead volume that actually has been sold. Timber volume under appeal and volume in timber sales offered for sale but not sold in the program year are shown in the year when actually sold.

The seventeen year average from the table below shows a total annual volume sold of 7.9 MMBF/year. This is 34% of the Forest Plan ASQ of 23.0 MMBF. These figures do not include an additional 6.2 MMBF that was sold to RY as part of the RY/Lost Creek Land Exchange (1997-2001).

Table 24 - ASQ Sold (Million Board Feet)

Description	Allowable Sale Quantity (ASQ)
1988	18.5
1989	21.1
1990	11.4
1991	6.3
1992	3.6
1993	9.9
1994	10.5
1995	10.5

Description	Allowable Sale Quantity (ASQ)
1996	9.0
1997	7.4
1998	8.8
1999	1.8
2000	2.9
2001	2.4
2002	2.9
2003	2.6
2004	4.8
Yearly Average	7.9
Forest Plan	23.0

Table 25 - Timber Under Contract and Volume & Acres Harvested

Description	Volume Under Contract (MMBF[7])[8]	Acres Harvested[9]	Sawlog Volume Harvested (MMBF)	Convertible Products Harvested (MMBF)	Total Volume Harvested (MMBF)
1988	21.5	3428	21.8	1.4	23.2
1989	24.7	3567	30.0	1.1	31.1
1990	13.2	2765	22.3	1.3	23.6
1991	13.5	763	5.1	0.8	5.9

[7] MMBF is million board feet

[8] Data for "Volume under Contract for 1988 and 1989 has been adjusted to include estimates for Per Acre Material (PAM). This was derived from the automated timber sales accounting system report listing uncut quantities remaining by contract at the end of the FY (September 30).

[9] Does not include personal firewood volume

Description	Volume Under Contract (MMBF[7])[8]	Acres Harvested[9]	Sawlog Volume Harvested (MMBF)	Convertible Products Harvested (MMBF)	Total Volume Harvested (MMBF)
1992	10.0	638	9.9	1.4	11.3
1993	12.3	486	6.0	1.3	7.3
1994	15.3	676	6.0	2.0	8.0
1995	9.7	858	6.9	0.7	7.6
1996	14.2	532	2.7	1.9	4.6
1997	Not available	603	2.0	0.5	2.7
1998	19.8	583	6.5	1.2	7.7
1999	11.1	694	4.2	1.2	5.4
2000	11.3	827	6.0	1.3	7.3
2001	17.4	409	2.8	2.6	5.4
2002	5.6	905	8.8	1.2	10.0
2003	3.9	574	7.4	1.4	8.8
2004	8.6	374	2.1	2.2	4.3
A/Y	13.3	1099	8.9	1.4	10.2

Total volume harvested averaged 10.2 MMBF/year, which is 44 percent of the Forest Plan projected level of 23.0 MMBF. Volume harvested is not directly proportional to volume sold, but is influenced by variables such as the type of harvest method, the length of time of the timber sale contract, the demand for timber, and sawmill harvest schedules. Volume harvested has been decreasing over the sixteen year time period due to the decrease in the amount of timber being offered and sold.

Table 12 - Commercial and Personal Use Firewood Removal

Description	Personal Use Firewood Permits Sold	Personal Use Firewood Sold (MMBF)
1988	910	2.0
1989	1262	2.7

Description	Personal Use Firewood Permits Sold	Personal Use Firewood Sold (MMBF)
1990	905	1.8
1991	206	1.2
1992	1058	1.4
1993	1021	1.3
1994	845	1.1
1995	857	1.2
1996	891	1.2
1997	Not available	Not available
1998	Not available	Not available
1999	905	1.2
2000	760	1.0
2001	1095	1.4
2002	902	1.2
2003	1045	1.4
2004	1077	2.2
Average/year	916	1.5

While personal use firewood was not identified as a specific component of this monitoring item in the Forest Plan, firewood volume is now considered part of the ASQ, Demand for firewood had leveled off in the late 1990's, but has picked up again with the increased insect killed trees. In FY 88 and FY 89, a personal use firewood permit was $2.50 per cord with a minimum of 4 cords. From FY 90 through FY 96, personal use firewood was $5.00 per cord with a minimum of 2 cords. Firewood increased to $6.00 per cord in FY97 and has remained at that price through FY2004. It is expected that firewood demand will probably continue at or near the current level.

Evaluation: Volume offered and/or sold does not exceed the ASQ over the 10 year period. No further evaluation is required.

Item 8-2: Timber Assumptions: Volume, Condition, Class, Logging, Acres Harvested

Activity: Insure that: 1) board foot/cubic foot ratios are correct 2) volume/acre yield is correct 3) condition class assignments are correct 4) scheduled logging system (cable and tractor) are used 5) scheduled of acres harvested is correct.

Unit of Measure: MMBF, acres, acres harvested

Reporting Period: Annual

Variability which would initiate further evaluation: ±15% of Forest Plan average projections.

Monitoring Results: 1. Board foot/cubic foot ratios: Cubic foot timber yield tables were used in the computer model "FORPLAN" to calculate Forest Plan timber volumes. Yield tables determine the volume of wood in individual trees by its diameter and height. Board foot/cubic foot ratios are necessary to convert cubic foot timber volumes into board foot volumes. With the possibility of all measurement going to cubic feet, board foot/ cubic foot ratio would become informational only.

2. Volume/acre yield: The volume actually harvested averaged 9.3 MBF/acre and is 35% higher than the anticipated Forest Plan volume of 6.9 MBF/acre. This may be due to the fact that personal use firewood is now included in the volumes harvested Top wood above the merchantable sawlog specifications and post and pole size lodgepole pine are also included in volume removed. Also, stands selected for harvest during this reporting period have better than average volumes for the Forest.

3. Condition class assignments: Condition class assignments have been reviewed at each annual sale review and adjusted to ground truthed conditions, to date there has not been a significant change.

4. Scheduled logging systems: The Forest Plan scheduled no cable logging during the first period. During this reporting period, the majority of the harvest has been with conventional tractor yarding systems. Other systems used have been skyline, helicopter and horse.

5. Schedule of acres harvested:

Table 27. Harvest Volume by Harvest Method

	VOLUME HARVESTED/YEAR	ACRES HARVESTED/YEAR	% CLEARCUT	% SHELTERWOOD	% SELECT	INTERIM
Forest Plan	23 MMBF	3331	61	12	T	27
FY 88-04	10.2 MMBF	1099	40	12	2	46

The acres harvested are influenced by the timber volume per acre and the silvicultural treatment method. Total acres harvested averaged 1,099 acres/year. The actual acres harvested are 33% of the estimated Forest Plan projection of 3331 acres at the 23.0 MMBF Forest Plan ASQ level.

Evaluation: Timber assumptions for board foot/cubic foot rations, volume/acre, condition class and logging system were acceptable. Assumptions for acres harvested and treatment methods however were erroneous. Acres harvested are only 33% of what was projected, this reflects in the volume harvested/year as well. Problems with assumptions are discussed at length in the AMS (2002) and are being addressed through Forest Plan Revision.

Item 8-3: Silvicultural Assumptions and Practices

Activity: Insure that: 1) Uneven-aged as well as even-aged management is applied to elk winter range and riparian areas 2) rotation age and CMAI assumptions are correct 3) silvicultural prescriptions follow Management Area standards and guidelines 4) silvicultural prescriptions precede all vegetative manipulation 5) silvicultural prescriptions are practical and achieve desired results.

Unit of Measure: Varied within prescriptions

Reporting Period: Annual

Variability which would initiate further evaluation: Silvicultural program review questions validity of assumptions. ±15% of Forest averages.

Monitoring Results:

1. Uneven as well as even-aged management is applied to elk winter range and riparian areas: Uneven-aged management is considered when prescribing treatment in these areas for timber sales.

2. Rotation age and culmination of mean annual increment (CMAI): Based on information contained in the timber sale prescriptions and field observations, stands are within the current rotation age and CMAI assumptions.

3. Silvicultural prescriptions follow management standards and guidelines: All silvicultural prescriptions and NEPA documents reviewed on the annual timber sale reviews follow management standards and guidelines.

4. Silvicultural prescriptions precede all vegetative manipulation: All stands within timber sales receive silvicultural prescriptions. Silvicultural prescriptions are sometimes lacking for vegetative manipulation projects that involve prescribed burning where very few trees are involved.

5. Silvicultural Prescriptions are practical and achieve desired results: Prescriptions reviewed both before and after implementation have been practical and have been within the range of desired results.

Evaluation: Silvicultural prescriptions and assumptions have been applied as required to timber stands. However, Forest Plan assumptions that clearcutting would be the primary harvest method in lodgepole pine, throughout the entire planning period are erroneous. In 1992 a policy decision was made by the Chief of the Forest Service to reduce the use of clearcutting and clearcut acres have steadily fallen.

Item 8-4: Size of Openings

Activity: Insure openings conform with standards and guidelines and to determine whether the maximum limits (40 acres) for harvest areas should be considered.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: Unacceptable results of an interdisciplinary (ID) team or administration review.

Monitoring Results: The current standard for openings created by timber harvest is a maximum of 40 acres unless larger openings are warranted. Creating openings greater than 40 acres in size require Regional Forester approval. Forest managers have requested and been granted variance from the regional standard on the size of openings for several Ecosystem management projects. The size of the variance has depended on the Eco-System goals but generally has been between 40 to 200 acres in size.

Evaluation: The size of opening standard was met where it applied. No further evaluation is required.

Item 8-5: Regenerated Yield Projections

Activity: Insure that regenerated yield projections are correct (by measurement of permanent growth plots and field sampling.

Unit of Measure: Plot

Reporting Period: 5 years

Variability which would initiate further evaluation: <50% accomplishment of scheduled permanent plots.

Monitoring Results:

Table 28 - Growth Plow Established and Re-measured (Number)

DESCRIPTION	GROWTH PLOTS ESTABLISHED	GROWTH PLOTS RE-MEASURED
1979-1985	33	0
1986	7	7
1987	3	7
1988	1	8
1989	5	4

1990	2	3
1991	0	2
1992	0	6
1993	5	32
1994	1	2
1995	0	3
1996	0	3
1997	0	0
1998	0	0
1999	0	0
2000	0	0
2001	0	12
2002	0	0
2003	0	0
2004	0	0
Average Per Year Since 1988	0.8	4.4

A total of 57 permanent growth plots were established on the Forest beginning in 1979, but only 14 since 1988. Remeasurement of the plots began in 1986. Seventy five plots were remeasured during the 1988-2004 reporting period.

Evaluation: Growth plot remeasurement was on schedule through 1996. Ten years of data available to show that regenerated yield projections were acceptable.

Item 8-6: Reforestation Practices and Assumptions

Activity: Insure that: 1) regeneration is obtained within 5 years after final harvest cut 2) scheduled planting is accomplished.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: Less than 75% accomplishment of scheduled planting in 5 years, less than 50% accomplishment per year. Greater than 10% increase in scheduled planting over 5 year period.

Monitoring Results:

Table 13 - Reforestation

DESCRIPTION	SITE PREP FOR NATURAL REGENERATION (TB 12)	PLANTED ACRES (TB 9, 10)
1988	403	341
1989	1580	53
1990	1150	211
1991	458	155
1992	153	313
1993	557	149
1994	250	228
1995	428	296
1996	213	412
1997	134	135
1998	461	107
1999	215	116
2000	201	0
2001	241	142
2002	258	160
2003	374	84
2004	302	127
Average Per Year	434	178
Forest Plan	2117	374

The Forest Plan assumption is that 10% of the acres harvested with a regeneration cut will need to be planted. A review of reforestation records between 1976 and 1998 indicate that this assumption is correct with 90% of the acres harvested during that period regenerated naturally. In most cases, natural regeneration actually results in overstocked stands.

The Forest Plan estimated that 73% of the 3331 acres harvested at the Forest Plan ASQ level of 23.0 MMBF would be by some type of regeneration cut (clearcut, shelterwood, or selection). Of

the acres harvested during the 17-year reporting period, 52% received some type of regeneration cut. Ranger Districts have scheduled for planting areas that are expected to be slow in regeneration naturally. Planting targets are being met. The Forest Plan anticipated that an average of 374 acres would be planted. At the reduced rate of harvest from Forest Plan ASQ levels it is estimated that approximately a minimum of 165 acres would need to be planted each year to meet the 5-year restocking requirement. Actual planting for the 17-year period between 1988 and 2004 has averaged 178 acres.

Evaluation: The intent of this monitoring item was to ensure harvest units were regenerated within 5 years where reforestation did not take place naturally. While the acres planted are far below Forest Plan projections, this is a reflection of reduced harvest, not lack of regeneration. No further evaluation is required.

Item 8-7: Timber Stand Improvement Practices and Assumptions

Activity: Insure that scheduled TSI projects are accomplished.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: Less than 75% accomplishment of scheduled TSI in 5 years, or less than 50% accomplishment per year.

Monitoring Results:

Table 30 - Timber Stand Improvement

DESCRIPTION	SILVICULTURAL EXAMS (THOUSAND ACRES-TB 8)	THINNING (TSI) ACRES (TB 14)
1988	29.5	179
1989	28.4	325
1990	46.5	272
1991	55.5	234
1992	8.0	339
1993	10.4	188
1994	10.6	282
1995	12.6	213
1996	10.7	196
1997	5.7	250
1998	<0.1	503
1999	<0.1	169
2000	0.1	15
2001	<0.1	225
2002	<0.1	218
2003	0.1	142
2004		
TOTAL	218.4	3867
AVERAGE PER YEAR	12.8	227
FOREST PLAN	60.0	300

The amount of acres requiring thinning each year depends on the degree of overstocking of areas harvested or burned over about 20 years ago. Silvicultural stand exams help identify stands that

need treatment. Approximately 12,800 acres receive stand exams each year. The average 227 acres thinned each year is 76% of the Forest Plan estimate.

Recent listing of the Canada lynx as Threatened or Endangered has reduced the thinning program considerably. Young lodgepole stands provide habitat for snowshoe hares, an important prey for lynx.

Evaluation: Although TSI work is decreasing, we are still within 75% of the Forest Plan projections over time. No further evaluation is required at this time.

Item 8-8: Lands Suitable for Timber Production

Activity: Evaluate the accuracy of suitable timberlands classification in the Forest Plan; periodically reexamine lands identified as not suited for timber production to determine if they have become suitable and could be returned to timber production.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: ±5% change in acreage of suitable lands.

Monitoring Results: The Forest Plan classifies 406,800 acres as suitable for timber production. The evaluation of land suitability for tentatively suitable lands and the further division of these lands into suitable forest land available for timber harvest is ongoing through landscape analysis, project aJla1ysis, and timber stand examinations.

This data is entered into the Timber Stand Management Record System (TSMRS) to provide information for forest analysis.

The timber stand examination process and NEPA analysis on suitable forest land provides an updating process for timber inventory, and as timber stands are examined we are better able to evaluate the status of the tentatively suitable lands. During the last seventeen years (1988-2004) 218,400 acres of stand exam have been completed, averaging 12,847 acres per year.

Evaluation: There have not been measureable changes in the acreage of suitable lands over the last 10 years. A Forest-wide re-analysis of tentatively suitable timber land is being conducted in FY03 and FY04. Suitable timber acres will be re-allocated as part of Forest Plan Revision.

Soil and Water

Item 9-1: Compliance with local, State, and Federal Water Quality Standards

Activity: Monitor to insure compliance with local, State, and Federal water quality statutes.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: Activities not meeting water quality standards or which would lead to long-term watershed degradation.

Monitoring Results: Performance standards provide an excellent tool for determining compliance with local, State, and Federal water quality standards. While the Data Sources specified under Forest Plan Monitoring Requirements for this item include water flow measurements and selected water quality parameters, these methods present problems with accurately portraying compliance or non-compliance due to the spatial and temporal variability, along with technical challenges associated with detecting changes in water quantity and quality. Performance standards include a three-tier approach to monitoring as described in Section 319 of the Clean Water Act and Forest Service Policy (FSH 2509.22). The three tiers include implementation, effectiveness and validation monitoring of Best Management Practices (BMPs) to ensure that Beneficial Uses of water are protected. During 2004, a Montana State Natural Resources and Conservation BMP audit was performed on the Butte Ranger District which reviewed timber harvest within a streamside management zone. This implementation monitoring showed minimal soil disturbance using a rubber tire skidder during the winter season. The audit concluded that it was a "great logging job"

Evaluation: Monitoring of a timber harvest on the Butte Ranger District met BMPs that ensure beneficial uses of water are protected.

Item 9-2: Riparian Rehabilitation Projects

Activity: To eliminate backlog of riparian rehabilitation acres by year 2000.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: <50% accomplishment of target in 5 year period.

Monitoring Results: During 2004, no riparian rehabilitation projects were completed

Evaluation: No examination was made of past project completion so no evaluation is possible.

Item 9-3: Productivity Changes in Sensitive Soils

Activity: Insure that management practices do not adversely affect soil productivity.

Unit of Measure: Benchmark vs. sampled soils

Reporting Period: Annual

Variability which would initiate further evaluation: When changes of baseline levels of the soil's chemical and physical properties exceed 20% as determined by lab analysis.

Monitoring Results: Since 2000, several proposed activity areas for both forestland and rangeland habitat types have been evaluated by use of a proving ring penetrometer. The

penetrometer measures pressure, which is a surrogate for space in the soil or compaction. Bulk density is another way of measuring the same thing.

Slash Piling - Monitoring in 2004 was done to evaluate the effects of machinery use on:

- Soil compaction effects from multiple passes over the soil with machinery.
- The relationship between penetrometer measurements and soil bulk density, a Soil Quality Standard criterion used to evaluate compaction.
- How dry a soil should be to reduce soil compaction from the machinery use.

One set of data was obtained from a slash piling operation accomplished with an excavator. Multiple machine passes were made over the same area with penetrometer measurements and bulk density measurements made with no passes and after 15 passes. Penetrometer measurements were also taken after 1, 3, and 8 passes. Soil water content from 3 samples taken with no passes was 18.1, 22.9, and 23.5 percent for the whole soil in the surface 3 inches. Soil water content in the 9-12 inch layer was 12.1 percent.

Surface bulk densities with no passes were 1.20, 1.13, and 1.12 g/cc and penetrometer readings averaged 0.56 MPa (megapascal, 1 MPa=145 lbs/sq.in.). Bulk density in the 9-12 inch layer was 1.38 g/cc with a penetrometer reading of 1.50 MPa with no passes.

After 15 passes, surface bulk densities were 1.17, 1.19, and 079 g/cc and penetrometer readings averaged 1.05 MPa. The 0.79 g/cc value was discarded because a large root was included in the core. The values for the 9-12 inch layer were 1.51 g/cc for bulk density and no penetrometer readings were taken.

Penetrometer readings were taken with no passes and after 1, 3, 8, and 15 passes. The penetrometer reading averages were 0.56, 0.67, 0.74, 1.00, and 1.05 MPa, respectively.

Grazed grasslands: A second bulk density and penetrometer data set was collected from grazed grassland sites to evaluate:

*The relationship between penetrometer measurements and soil bulk density, a Soil Quality Standard criterion used to evaluate compaction.

*Bulk Density and penetrometer measurement relationships for grassland soils with different parent materials and landform position.

Two sites were chosen, one a grassland soil developed in granitic residuum located on a ridge and the other a grassland soil developed in sedimentary rock in an upland basin. Measurements were taken at 2 locations within each site.

The granitic site had an average bulk density of 1.33 g/cc and an average penetrometer reading of .83 MPa. The sedimentary rock site had an average bulk density of .79 g/cc and an average penetrometer reading of .85 MPa.

Results:

Slash Piling - Normally machinery is not operated on soils unless the soil is frozen or is drier than 12 percent water content. The increase in soil bulk density after 15 passes was 6.2 % for the surface 3 inches and 9.4 % for the 9-12 inch layer well within the 20% change in the Forest Plan Standard and the 15 % limit in the Region 1 Soil Quality Standards. The 6.2% increase was calculated by using the lowest bulk density value for no passes and the highest value after 15 passes in order to evaluate the worst case.

Literature regarding penetrometer use states that values less than 1 MPa indicate little effect on root elongation, values between 2.0 and 3.0 MPa limit root elongation, and values between 1.0 and 2.0 MPa have intermediate effects. Only the readings taken after 15 passes of the equipment exceeded 1 MPa and that only slightly with a value of 1.05 MPa.

The penetrometer readings and bulk densities both show increases with more passes of the machinery and both indicate that the increases should have little effect on long term productivity because of compaction. The pattern also indicates that 15 passes of the excavator has slightly exceeded a threshold, 1 MPa, where more passes would begin to produce undesirable effects on productivity. The soils sampled were wetter than normally accepted for machinery operation. Drier soils would likely increase the number of passes needed to cause undesirable effects on productivity.

Grazed Grasslands - No data are available for similar soils that are not grazed so there is not an undisturbed value to compare with these data. However, the 1.33 g/cc bulk density for the granitic site seems high. It would be at the 20% change in the Forest Plan Standards if an undisturbed value of 1.10 g/cc is accepted as a reasonable undisturbed bulk density. The penetrometer measurements, however, indicate that the site is within standards because the 0.83 MPa is below the 1.0 MPa threshold for impacting root elongation. Both measurements for the sedimentary site are low and are well within Forest Plan Standards.

The results indicate the variable relationship between bulk density and penetrometer measurements since the average penetrometer readings for both sites were similar, 0.83 MPa and 0.85 MPa, while the bulk densities were very different, 1.33 g/cc and 0.79 g/cc. The dense roots in the soil at the sedimentary rock site may have contributed to the low bulk density values and caused the penetrometer readings to be higher. The results also demonstrate the variability in bulk density values for different soil parent material/landform combinations. Although the results are inconclusive, they will be added to a growing database that will enable us to further evaluate the relationship between bulk density and penetrometer measurements and their usefulness for monitoring purposes.

Evaluation: Changes in the physical properties of soils were tested using a penetrometer and bulk density analysis. Tests of slash piling operations with multiple machine passes result in compaction levels well within the 20% change in the Forest Plan Standard and the 15% limit in the Region 1 Soil Quality Standards. Tests on grazed grasslands indicate compaction levels within Forest Plan Standards as well. Based We will continue evaluating the relationship between bulk density and penetrometer measurements as part of the Regional program for monitoring soil quality and function which began this year, 2004.

Item 9-4: Adequate Water Supply

Activity: Insure availability of adequate water to maintain mgt. options, water rights and maintain existing water rights and update WURR file.

Unit of Measure: N/A

Reporting Period: Annual

Variability which would initiate further evaluation: Any change which would require acquisition of additional water rights.

Monitoring Results: Ensuring availability of adequate water supplies is provided on an "as-needed" basis during normal business/service operations. These operations include dealing with any water right issues associated with proposals and actions like land exchanges, ditch bill easements, and applications by outside interests for new appropriations on federal land. Appropriate actions in regards to these issues were performed during 2004. The WURR database (former US Forest Service database application) is currently being replaced by a new application in the NRIS Water Module, but is not being utilized at this time on this forest. Any changes to water rights are tracked through the Montana State Department of Natural Resources Water Rights database.

Evaluation: Water rights are being adjusted to ensure availability of water supplies for appropriate management**.** Changes in water rights are being tracked through the appropriate agencies and data bases.

Minerals

Item 10-1: Mineral Activities

Activity: Monitor Forest Service allocations that may have an effect on minerals activities; mineral activities that have an effect on surface resources. Check that recommended stipulations are adequate to protect resources but not severely restrictive on mineral activity.

Unit of Measure: Operating Plans, Prospecting Permits, and Lease Applications

Reporting Period: Annual

Variability which would initiate further evaluation: Departure from approved operating plan or violation of assigned stipulations. Unacceptable review of lease application by ID Team.

Monitoring Results: This item was not reported on in 2004.

Evaluation: No evaluation is available.

Protection

Item 11-1: Acres and Volumes of Insect and Disease Infestations

Activity: Insure that harvest emphasizes removal of high risk for mountain pine beetle attack. Maintain inventory of high risk stands of insect and disease infestations.

Unit of Measure: Acres, MBF

Reporting Period: Annual

Variability which would initiate further evaluation: Unacceptable results of an ID team review or if less than 70% of timber volume in program is from high risk mountain pine beetle stands.

Monitoring Results: For the entire reporting unit mountain pine beetle was recorded on more than 108,000 acres up from 31,000 acres reported in 2003.

Butte Ranger District - An estimated 814,000 lodgepole pine on 54,900 acres on the Butte Ranger District were infested in 2004. Beetles have moved from the Basin Creek and Thompson park areas to the west and south. Beetle activity increased in the East Ridge, and to the north of Homestake Pass. Increasing amounts of beetle killed lodgepole pine were mapped in the Fleecer Mountains. Douglas fir beetle also increased slightly over 2003 causing mortality of 800 trees on 330 acres. Spruce budworm defoliation also. Projects were initiated to salvage dead wood and treat areas where human developments or municipal watersheds were threatened by dense, dry fuels. The Basin Creek EIS attempted to reduce mountain pine beetle losses in the Basin Creek drainage south of Butte. The project remains in litigation.

Jefferson Ranger District - Mountain pine beetle increased on the Jefferson R.D. in 2004. More than 205,000 lodgepole pines on almost 40,000 acres were killed. In the Tobacco Root Mountains groups of subalpine fir were killed by western balsam bark beetle over 1500 acres.

Pintlar Ranger District - On the former Deer Lodge R.D. now part of the Pintlar R.D. mountain pine beetle increased in 2004 with an estimated 14,000 lodgepole killed over 3600 acres. About 850 Douglas-fir were killed on 300 acres. Increasing mountain pine beetle (MPB) populations were found in many mature lodgepole pine stands although the total acreage decreased from activity in 2003, 125 acres of MPB were recorded in lodgepole pine stands and about 20 acres in ponderosa pine. Douglas-fir beetle decreased slightly from 2003 with 4800 acres and about 16,000 Douglas-fir killed. Mortality from western balsam bark beetle totaled slightly more than 3500 trees on 2300 acres less than the 4225 acres recorded in 2003. Douglas-fir beetle lures/traps were deployed in the East Fork Reservoir area to cover 1,300 acres.

Bark beetles are native insects to western coniferous forests that respond to drought cycles and the availability of trees of suitable phloem thickness to allow successful breeding. In the natural cycle when drought weakens the ability of trees to successfully resist bark beetle attack, epidemics occur and for periods up to ten years, then tend to subside as parasites, predators, changed moisture regimes, or lack of breeding hosts naturally limits further expansion. For the most part beetles thin stands of conifers from above with the dead trees commencing a recycling process where nutrients and organic material return to the soil. For a period of time these dead

stands may be more susceptible to fire where human development has occurred in the vicinity of beetle killed stands these stands. Hazard trees and potential fires present a management challenge since the system has human development to contend with.

Evaluation: Volume in the timber program continues to come from high risk insect infested stands. Inventories of infested stands are maintained. No further evaluation is required.

Item 11-2: Air Quality

Activity: Prescribed fire meets air quality standards of State and Federal guidelines.

Unit of Measure: Numbers of prescribed fires

Reporting Period: Annual

Variability which would initiate further evaluation: 10% beyond standards and guides.

Monitoring Results: All prescribed burning must meet State and Federal air quality guidelines or burning is not carried out. Individual prescribed fires are registered with the State and burning air advisories are checked daily during the burning season. All prescribed fires have met State and Federal air quality standards. No intrusions are known to exist.

Evaluation: The 5 Year Monitoring Review recommended this item be dropped. It pertains to operation of projects and does not measure implementation, effectiveness, or validation of Forest Plan Goals, Objectives or Standards. Monitoring by the State, based on registering individual prescribed fires and issuance of air advisories, insures that State and Federal standards are not exceeded.

Item 11-3: Fuel Treatment Outputs

Activity: Achieve Forest Plan fuel treatment target reports.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: -5% to +25% of programmed targets.

Monitoring Results: The Beaverhead-Deerlodge National Forest accomplished 13,933 acres of fuel treatment in 2004 with a target of 6,145 acres. This is the first time since 2000 that actual accomplishments have exceeded targets. The primary emphasis over the last 4 years for treatment is the wildland urban interface and areas in high risk fire regimes or condition classes. These are typically higher cost treatments.

The Deerlodge Forest Plan established a target of 5400 acres fuel treatment/year with 44% of it based on treating fuels created by logging. The 5 year average for the whole Forest is 6,730 acres, only a small proportion of it is in logging slash. Since the big wildfire year of 2000, our fuels program has shifted to protection and fuel reduction in areas where people live and work.

Evaluation: We are not meeting the expectations of this monitoring item. The acres tied to this monitoring item are no longer relevant to the Forest fuel treatment program and program targets. The Forest Plan revision effort is taking a new look at alternatives for using fuel treatment to achieve desired conditions.

Item 11-4: Wildfire Acres

Activity: Assume wildfire acres as within projected annual burned acres.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: +50% above projected average annual wildfire burned acres.

Monitoring Results: On the Deerlodge portion of the forest, 166 acres burned in FY04. This is less than the identified annual expected acres burned of 224.

Evaluation: We are within 50% of the projected wildfire acres. However, given forest health issues, increase in stand densities, more fire regimes at risk fires have increased in size, intensity and severity. The expected acres burned is an unrealistic target and should be adjusted or dropped as a monitoring item.

Item 11-5: Cost of Suppression, Protection Organization and Net Value Change

Activity: Keep fire management program cost effective.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: ±5% increase in real costs.

Monitoring Results: The fire management program for FY04 was funded at approximately 80% of the Most Efficient Level (MEL) as identified in NFMAS (a nationwide funding tool). We met or exceeded targets associated with that level of funding. Limitations in funding on a national and regional basis have for the most part made NFMAS obsolete as a tool for measuring efficiency and providing funding. A new process is being implemented to measure efficiency and budget options. Fire Program Analysis (FPA) is expected to be fully operational in FY07.

Evaluation: Suppression budgets and organizational costs are only tracked for the combined Beaverhead and Deerlodge zones now. We cannot break out real costs in a way that would allow reasonable tracking of this monitoring item. No further evaluation is being done.

Facilities

Item 12-1: Local Roads in Place and Collector Roads Constructed

Activity: Insure that assumptions are valid concerning: 1) local/collector road density 2) local/collector road standards.

Unit of Measure: Miles

Reporting Period: Annual

Variability which would initiate further evaluation: ±20% of predicted miles of road.

Monitoring Results: Table 31 displays Beaverhead-Deerlodge National Forest accomplishments in road construction and reconstruction over the past five years, as well as the projections from the individual Deerlodge and Beaverhead Forest Plans. (Note: Until 1998, the Deerlodge and Beaverhead National Forests reported road accomplishments separately. Due to the consolidation of the two Forests and subsequent changes in budgeting and reporting, the mileages shown are totals for the combined Beaverhead-Deerlodge National Forest. Thus, these numbers cannot be directly compared to the tables shown in Deerlodge Forest Monitoring and Evaluation reports for FY1996 and earlier.)

Table 31 - Road Construction and Reconstruction, Fiscal Years 2000-2004

	Construction	Reconstruction
2000 Miles	0	0
2001 Miles	1.0	2.6
2002 Miles	0.6	5.1
2003 Miles	0.5	5.4
2004 Miles	0	21.9
Average 2000-2004	0.4	7.0
Deerlodge Forest Plan Miles	24.7	4.5
Beaverhead Forest Plan Miles	30.8	11.7
TOTAL Forest Plan Miles	55.5	16.2

The Deerlodge Forest Plan projects new construction at 24.7 miles per year. Actual construction on the combined Beaverhead-Deerlodge National Forest averaged only 0.4 mile annually over the past five years, less than one percent of the projected mileage. Reconstruction averaged forty-three percent of the combined Forest Plan projected level during the same period. In FY2004, no new permanent (system) roads were constructed on the Beaverhead-Deerlodge; 21.9 miles of existing road were reconstructed, nearly double the combined total from the previous four years.

Evaluation: Road construction on the Forest averaged only a small fraction of the projected mileage in FY04 and over the last five years. The trend of decreased road construction is occurring, at least in part, due to public opposition to the development of new specified roads; as a result, timber harvest units are situated along existing roads or are accessed with temporary roads. Emphasis has shifted toward reconstruction and maintenance of the existing road system, and identifying the minimum transportation system necessary for meeting Forest management objectives. This issue is being reevaluated through Forest Plan Revision.

Item 12-2: Road Management

Activity: Insure that assumptions are valid concerning local/collector road 1) yearlong closures 2) seasonal closures.

Unit of Measure: Miles

Reporting Period: Annual

Variability which would initiate further evaluation: ±30% of miles of predicted road closed either seasonally or yearlong.

Monitoring Results: Gates are the primary method of physically closing specified roads on the Forest, followed by signs only (no physical barrier), natural barriers, and man-made barriers. Table 32 shows the extent of road use restrictions on the Forest (Deerlodge portion only).

Table 32 - Road Use Restrictions[10], Fiscal Year 2004.

RESTRICTION PERIOD	RESTRICTED MILES
Yearlong	110
Seasonal	695

Vehicular traffic on roads is managed to provide public access for resource use and recreation, to reduce maintenance costs, to minimize sedimentation into streams, to keep disturbance of wildlife at acceptable levels, and to carry out the goals, objectives, standards and guidelines as defined in the Forest Plan. Roads have been permanently closed and seasonally restricted to meet the above objectives. Approximately thirty-eight percent of the National Forest system roads on the Forest have some type of restriction.

Evaluation: The Forest Plan did not actually predict how much of the total road system would be closed seasonally or yearlong. Monitoring of all the roads in the road system has shown that Forest road management has been dynamic and responsive to the objectives in the Forest Plan, the desires of the public, and the goals and objectives of our cooperating agencies. The amount of roads with closures at this time appears appropriate. No further evaluation of this monitoring item is necessary

[10] Table 26 displays restrictions applicable to standard highway vehicles. Many roads have different restrictions for other types of traffic, such as motorcycles, ATVs, and snowmobiles

Economics

Item 13-1: Verification of Unit Cost Used in Plan Compared to On-The-Ground Cost

Activity: Acquire accurate cost data.

Unit of Measure: Dollars/Acre

Reporting Period: Annual

Variability which would initiate further evaluation: In general, ±25% however, very large cost items such as road constructions and logging cost would have a smaller degree of acceptable variability, i.e., ±10%.

Monitoring Results: This item was not reported on in 2004.

Evaluation: No evaluation was done.

Adjacent Lands, Resources, Communities, and Agencies

Item 14-1: Adjacent Lands, Resources, Communities, and Agencies

Activity: Effect of National Forest management on land, resources, and communities adjacent to the National Forest. Determine effects of Forest Plan on other ownership, resources, and communities.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: Unacceptable results of an ID Team and or Management Team Review.

Monitoring Results: The Beaverhead-Deerlodge National Forest accounts for 42% of the land in 7 counties. The Forest is surrounded by a number of communities, as small as Jackson, and as large as Butte. The Forest is a source of natural resources, recreational opportunities and lifestyle settings for the residents of those adjacent communities. This monitoring item will report on the economic value of activities and resource outputs from the Beaverhead-Deerlodge National Forest in 2004.

The value of activities and resource outputs from the Beaverhead-Deerlodge National Forest (as a whole) were calculated for 2004 using an economic input output model called IMPLAN. IMPLAN was used to develop the direct and indirect effects of outputs, revenues, expenditures and employment on employment and labor income in the 8 counties affected most directly by the Forest. Data on recreation visits were derived from a 2000 National Visitor Use Monitoring survey conducted on sites around the BDNF. We estimate a 1% growth of visits reported in the FY03 report.

Table 33 - Values of Activities and Resources from the Beaverhead-Deerlodge National Forest in 2004.

Resource Area	Output	Employment (Jobs related to FS activities)	Labor Income ($million related to FS activities)
Recreation (visits)	594,000	557	9,491
Fish and Wildlife (visits)	473,620	568	9,780
Range (head month)	146,983	56	875
Timber (MMBF)	3.539	145	4,134
Minerals	Not available	-	-
Payments to States/Counties		4	127
Forest Service Expenditures ($million)	$21	408	22,930
Forest Service Employment	143 permanent 45 Seasonal		
TOTAL		1,739	$47,337

Table33 shows that in 2004, the Beaverhead-Deerlodge National Forest was responsible for contributing approximately 1,739 jobs to the 8-county area economy. This amounts to 3.8% of the total employment of 45,204. The Forest contributes about $47 million in labor income to the 8-county area. This amounts to 4.4% of the areas labor income of $1,061 million.

For a complete discussion of how management of the Beaverhead-Deerlodge National Forest affects local uses and lifestyles, refer to Volume I of the Draft Revised Land and Resource Management Plan, “Social and Economic Impacts”, June 2005.

Evaluation: The Forest Leadership Team has not identified unacceptable impacts. No further evaluation is necessary

Item 14-2: Adjacent Lands, Resources, Communities, and Agencies

Activity: Effect of management on adjacent lands and effects of other Government agencies (State, Federal, Local) activities on the National Forest. Determine effects of management of other ownership on Forest Plan.

Unit of Measure: Varied

Reporting Period: Annual

Variability which would initiate further evaluation: Unacceptable results of an ID Team Review.

Monitoring Results: Effects of other agencies or private landowners on National Forest Management are tracked largely through the "cumulative effects" analysis in National Environmental Policy Act (NEPA) documents for various projects across the Forest.

Evaluation: Management of the Beaverhead-Deerlodge National Forest is affected by a number of other agencies and private landowners in several arenas. The areas influenced the most are described below:

Threatened, Endangered and Species of Concern - Decisions by the US Fish and Wildlife Service on listed species (bull trout, grizzly bear, bald eagle, trumpeter swans, and lynx) add both management standards and reporting requirements. The Westslope Cutthroat Conservation Agreement and Grayling recovery plans guide fish restoration efforts outside of listed fish species. We coordinate to the extent possible with the Montana State Elk Management Plan and State Comprehensive Wildlife Plan. In addition, a Memorandum of Understanding with Montana Fish Wildlife and Parks constrains treatment of sagebrush habitat on portions of the Forest.

Travel Management and Recreational Opportunities - decisions about travel by neighboring agencies (Dillon and Butte Field Offices of the BLM, Gallatin National Forest, and Yellowstone National Park) affect the balance of recreation opportunities our users expect from this Forest. Closures on other lands, whether private or public, can bring new users to this Forest. With new or increased use, user conflicts and resource conflicts can increase.

Fire Management – Adjacent ownerships and in holdings of private property influence management options for fire suppression, wildland fire use, fuel treatments and prescribed fire.

The Healthy Forest Restoration Act of 2003 (HR 1904) expedites the preparation and implementation of hazardous fuels projects on all federal land and assists rural communities, States and landowners in restoring healthy forest conditions on state and private lands. Community assistance plans developed with counties and the State are identifying additional wildland/urban interface and opportunities for fuels treatments in urban interface areas adjacent to the Forest. The Madison County Strategic Wildland Fire Plan (2003) is an example of this cooperation. The Plan inventories and prioritizes fire hazards and problems in the count, and outlines a wide range of risk reduction strategies. Opportunities for intergovernmental cooperation are identified, and the National Fire Plan's emphasis upon community capacity-building is reflected. This plan incorporates the 2000 Big Sky Fire Management Strategy, also an interagency planning effort.

Coordination and cooperation across ownerships can enhance the Forest Service ability to protect high risk, high value areas. The ability to treat acres across boundaries and on private ownership contributes to long-term forest health, mitigation of large fires, reduction of suppression costs and greater firefighter and public safety.

All Resources

Item 15-1: All Resources

Activity: Effect of emerging issues or changing social values. Keep publics informed; raise FS awareness to public concerns.

Unit of Measure: N/A

Reporting Period: Annual

Variability which would initiate further evaluation: If issues cannot be dealt with under the Forest Plan.

Monitoring Results: An Analysis of the Management Situation document was released in December 2002 (FY03) to address changes since the 1986 Plan was written, specifically, those emerging or changing issues not adequately addressed by the Forest Plan. These will all be key issues in revising the Forest Plan. Please refer to that document (available at http://www.fs.fed.us/r1/b-d/) for a comprehensive discussion of this monitoring item.

Evaluation: Those new issues not resolved or adequately addressed by the current Forest Plan include:

Travel Management - Demand for both motorized and non-motorized opportunities are increasing. Motorized access to remote areas is increasing due to technological advances in ATVs and snowmobiles. Conflicts around motorized use are increasing. The Statewide Off Highway Vehicle Amendment in 2001 restricted cross-country vehicle travel, changing the BDNF travel plan, and requiring subsequent travel planning.

Fire Management - Agency fire management policies have been through a significant change, particularly since 2000 when significant drought hit the West and large scale fires broke out in nearly every western state. The National Fire Plan (2001) acknowledged an environment of increasing risk to firefighters, rural communities (wildland urban interface), and resource values (TES, water quality, air quality, soils, etc.) affected by wildland fire. Agency policy and direction for fire and fuel management has expanded significantly since.

Roadless Area Management - Public interest in roadless areas has shifted since the 1986 Plan was written. The Roadless Area Conservation Rule of 2001 is a reflection of national pressure to protect roadless lands in the National Forest System. The Rule has not been implemented to date because of legal controversy and process. However, the Chief of the Forest Service issued an Interim Directive for protection of roadless areas, part of which reserved decision authority for certain road construction and timber harvest activities in inventoried roadless areas to the Chief. The Directive also delegates to the Regional Forester certain responsibilities. As a result, little or no activity has taken place in inventoried roadless areas on the Forest since 2000. A re-inventory of roadless areas will take place during revision of the Forest Plan, noting those changes made since the 1986 Plan was written and accounting for areas with roadless values that should be included.

The Interdisciplinary Forest Plan Revision Team, confirmed by the Forest Leadership Team, has identified these as key topics to tackle during Forest Plan Revision.

Item 15-2: All Resources

Activity: Evaluate lands identified as not meeting physical or biological characteristics used in initial allocation. Verify allocations in the Forest Plan.

Unit of Measure: Acres

Reporting Period: Annual

Variability which would initiate further evaluation: All changes will be evaluated annually.

Monitoring Results: The allocations made in the 1987 Deerlodge Forest Plan are being re-evaluated through the Forest Plan Revision process, currently underway. Lands physically and biologically capable of supporting timber production were mapped in 2004 using Geographic Information Systems (GIS) technology and protocol outlined in regulations (36 CFR 219.14(a) and Forest Service Handbook 2409.13. Approximately 1,149,148 acres or 35% of the Beaverhead Deerlodge Forest were identified as tentatively suitable using this process.

Lands capable of supporting livestock grazing were also remapped according to regulation (36 CFR 219.20).

“Suitable” timber or grazing allocation will be made based on those lands previously determined to be physically and biologically capable of supporting those uses. Timber suitability and range suitability allocations vary depending on the alternative selected by the Forest Plan Record of Decision, due out in the winter of 2006

Evaluation: No lands were identified as not meeting physical or biological characteristics used in initial allocations in 2004. Instead, the question of whether allocations made in 1987 continue to be appropriate was focused on reallocating lands during the Forest Plan Revision process

Research

Item 16-1: Research

Activity: Determine needed research for National Forest Management. Identify research needs.

Unit of Measure: N/A

Reporting Period: Annual

Variability which would initiate further evaluation: Lack of reliable data to base predictions on.

Monitoring Results:

Antennaria densifolia is an alpine species that, along with several other tundra plants, may be threatened by climate warming. Climate warming could lead to expansion of invasive non-native

species and noxious weeds into these fragile habitats. Research on climate change and its impacts to native vegetation and management is a continuing research need.

Research pertaining to disturbance ecology and pollinators of lemhi penstemon is needed. An update of the Montana Natural Heritage Program database for *Penstemon lemhiensis* was proposed and implemented in 2005.

Whitebark pines are under attack by mountain pine beetles and white pine blister rust and are declining severely in much of its range in the west. With approximately 300,000 acres of this type on B-D NF lands, some of it occurring in the Greater Yellowstone Ecosystem, research is needed on what management techniques are likely to preserve this species, an important contributor to food supplies of birds and animals including the grizzly bear.

Quaking aspen clones have declined dramatically in recent years. Evaluation of aspen during the Forest Plan revision shows them far below the lowest estimated historic range of variability. Research on cause of this decline and restoration opportunities is needed.

Evaluation: No further evaluation of this monitoring item is required. The Deerlodge Five Year Review (1994) recommended dropping this monitoring item because there are other avenues to address it.