United States
Department of
Agriculture

Forest
Service

Northern
Region

September 1987

FOREST PLAN

Bitterroot National Forest

PREFACE

The Forest Plan is in compliance with the National Forest Management Act of 1976 (NFMA), the regulations for National Forest Land and Resource Management Planning (36 CFR Part 219), and the National Environmental Policy Act of 1969 (NEPA), including the Record of Decision for the Environmental Impact Statement covering the Forest Plan.

Further information about the Forest Plan can be obtained from:

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CONTENTS Page

I. INTRODUCTION
- A. Purpose....I-1
- B. Management Direction....I-1
- C. Relationship to Other Documents....I-1

II. FOREST-WIDE MANAGEMENT DIRECTION
- A. Management Philosophy....II-1
- B. Forest-wide Management Goals....II-1
- C. Forest-wide Management Objectives....II-3
- D. Research Needs....II-11
- E. Desired Future Condition of the Forest....II-12
- F. Forest-wide Management Standards....II-17

III. MANAGEMENT AREA DIRECTION
- A. Introduction....III-1
- B. Management Area 1....III-3
- C. Management Area 2....III-9
- D. Management Area 3a....III-15
- E. Management Area 3b....III-22
- F. Management Area 3c....III-30
- G. Management Area 5....III-36
- H. Management Area 6....III-41
- I. Management Area 7a....III-45
- J. Management Area 7b....III-49
- K. Management Area 7c....III-53
- L. Management Area 8a....III-58
- M. Management Area 8b....III-61
- N. Management Area 9....III-64
- O. Management Area 10....III-69
- P. Management Area 11a....III-73
- Q. Management Area 11b....III-76
- R. Management Area 11c....III-78
- S. Timber Sale Program....III-80

IV. IMPLEMENTATION
- A. Introduction....IV-1
- B. Influence of Past Management on Future Options....IV-1
- C. Project Planning....IV-1
- D. Monitoring and Evaluation....IV-3
- E. Amendment and Revision....IV-5

V. ANALYSIS OF THE MANAGEMENT SITUATION SUMMARY
- A. Supply Conditions....V-1
- B. Demand, Capacity, Potential and Opportunities....V-3

VI. GLOSSARY....VI-1

VII. REFERENCES....VII-1

APPENDICES Page

A. Land Classification Summary....A-1
B. Vegetation Management Practices....B-1
C. Timber Productivity Classification....C-1
D. Long-term Sustained Yield and Allowable Sale Quantity....D-1
E. Present Forest Conditions....E-1
F. Future Forest Conditions....F-1
G. Forest Plan Implementation Schedule....G-1
H. Corridor Planning....H-1
I. Withdrawals From Mineral Entry....I-1
J. Projected Budget Required to Implement the Forest Plan....J-1
K. Documents Available Upon Request....K-1
L. Landownership Adjustment Plan....L-1
M. Fire Management Direction....M-1
N. Stipulation Requirements of Oil and Gas Leasing on Nonwilderness Lands....N-1
O. Wild and Scenic Rivers....O-1

LIST OF FIGURES Page

I-1 Location and Districts of the Bitterroot National Forest....I-2
IV-1 Decision Flow Diagram....IV-10
V-1 Developed Recreation....V-3
V-2 Roaded Dispersed Recreation....V-4
V-3 Roadless Semiprimitive Recreation....V-5
V-4 Wilderness....V-6
V-5 Livestock Range....V-7
V-6 Elk Winter Range....V-8
V-7 Catchable Trout....V-9
V-8 Timber....V-10

LIST OF TABLES Page

II-1 Average Annual Projected Outputs and Activities by Time Period....II-8
II-2 Research Natural Area Objectives....II-9
II-3 Additional Data Requirements and Accomplishment Schedule..II-10
II-4 Land Classification....II-12
II-5 Maximum Area Allowed to be Hydrologically Unrecovered....II-24
II-6 Snow Survey Sites....II-26
II-7 Waterbar Spacing Guide....II-27
II-8 Road Density Standards by Land Type and Visual Quality Objective....II-35
III-1 Management Area Assignment....III-2
III-2 Research Natural Area Location, Size and Ecosystem Targets....III-64
III-3 Timber Sale Program....III-80
IV-1 Forest Plan Monitoring Requirements....IV-6
V-1 Maximum Potential Resource Supply and Current Program Supply....V-2
V-2 Area of Nonenergy and Energy Potential....V-11

I. INTRODUCTION

A. Purpose

The Forest Plan guides all natural resource management activities and establishes management standards for the Bitterroot National Forest (Figure I-1). It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management.

B. Management Direction

The goals, objectives, standards, and monitoring and evaluation requirements comprise the Plan's management direction. However, the projected outputs, services, and rates of implementation are dependent on the annual budgeting process.

C. Relationship to Other Documents

1. Environmental Impact Statement

The Forest Plan is based on the various considerations which have been addressed in the accompanying Environmental Impact Statement (EIS), and represents the Preferred Alternative from that EIS modified as required by the Record of Decision. The planning process and the analysis procedure used in developing this Plan, as well as the other alternatives that were considered, are described or referenced in the EIS. Project level activities will be planned and implemented to carry out the management direction in this Plan. The NEPA requirements will be followed as the site specific issues and impacts are addressed during project development.

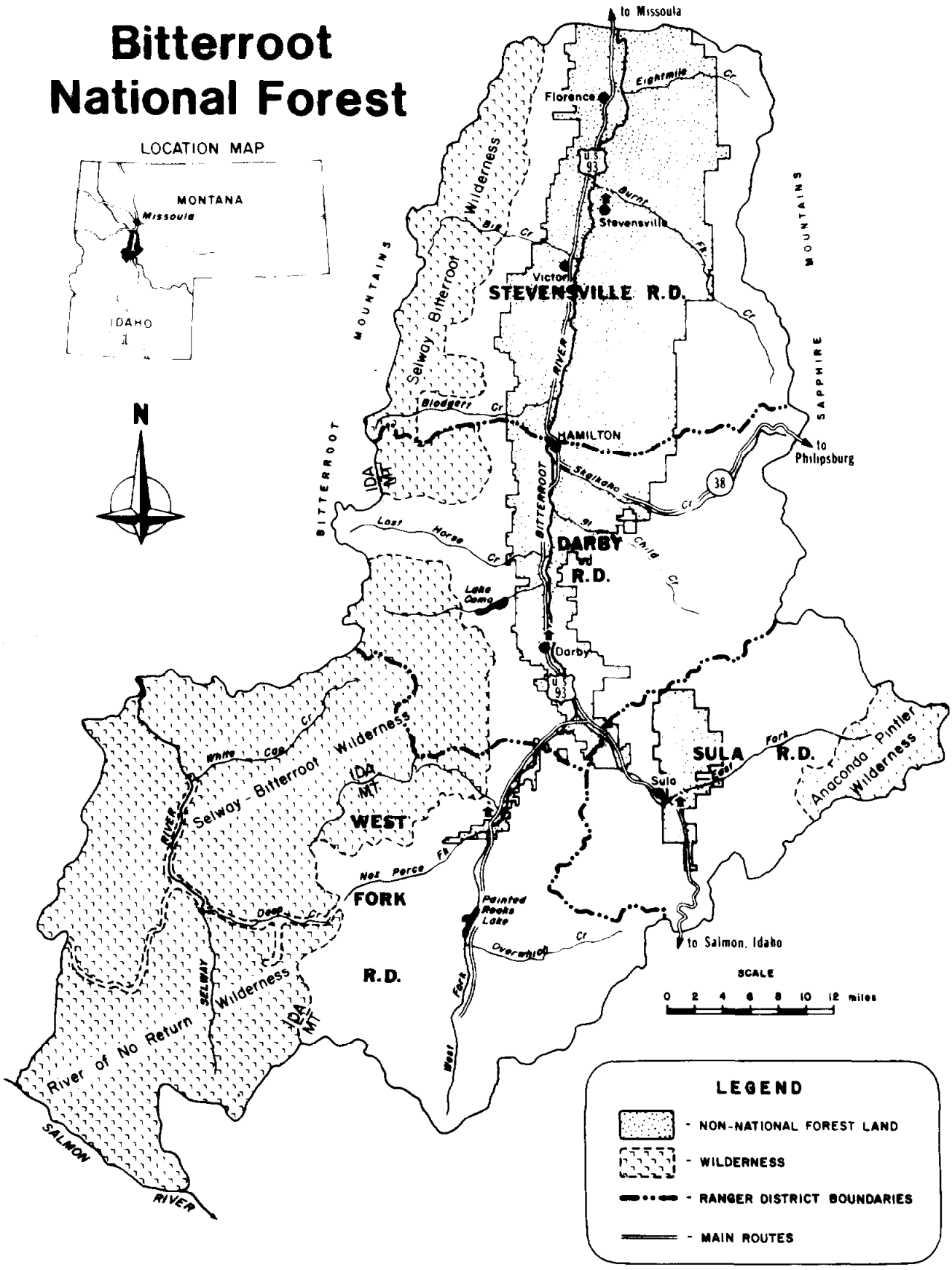
2. Regional Guide

The Regional Guide displays the Northern Region's portion of the Forest and Rangeland Renewable Resources Planning Act (RPA) Program among the National Forests, provides direction for National Forest plans, and develops standards and guidelines for addressing major issues and management concerns which need to be considered at the Regional level to facilitate Forest planning. The Regional Guide process allows for discussion and analysis of National Forest program capabilities to determine opportunities to meet short- and long-term natural resource demands.

3. Environmental Analysis Reports

The Forest Plan defines management goals, objectives, standards, and schedules that guide project analyses and decisions. Projects which will have no significant impact on the human environment, based on past experience and environmental analysis, may be categorically excluded from documentation. An environmental impact statement (EIS) is necessary for major actions that may produce significant effects on the human environment. An environmental assessment (EA) will be prepared when environmental analysis indicates that a proposed project cannot be categorically excluded and the need for an EIS is not certain. Public notification of environmental analysis for EAs and EISs will be through contacts with interested people identified on a Forest mailing list and the local news media. Public involvement will be part of the first steps of the decision making process, with public notice early in the analysis or assessment steps and continuing through implementation.

Figure I-1
Location and Districts of the Bitterroot National Forest



II. FOREST-WIDE MANAGEMENT DIRECTION

A. Management Philosophy

Management will reflect the character of the Bitterroot Forest and its history as a national treasure producing particularly outstanding goods and services for people. For over thirty years timber harvest provided essential materials for our way of life. This period included controversy over harvest and regeneration practices of the 1960's. At the same time and in harmony with development activities the Forest offered people a wide range of outdoor experiences in an environment with clean air, clear water, all degrees of solitude, wildlife, and outstanding scenery. This was recognized in the last Forest Multiple Use Plan prepared 14 years ago. A quote from Part 1 of this 1972 Multiple Use Plan follows:

> "Though some good tree-growing sites are present, recreation including esthetics and natural beauty, high quality water and wildlife offer the greatest management opportunities, and both local and distant public demand for these values is strong. On the other hand, there is a high degree of economic demand and local dependency for timber from the National Forest. Thus, because logging has strong potential to adversely affect other values, the challenge is to manage most land for recreation, water, wilderness and wildlife values while furnishing a reasonable supply of commercial wood products."

In recent years Congress has added about 300,000 acres of wilderness to the Forest reinforcing an edict to manage for wilderness values in balance with timber harvest on adjacent lands. Heavy emphasis on dispersed recreation makes management of timber a challenge. Closer regulation, new technology, and the basic improved work quality of today's loggers has diminished the potential for logging that adversely affects other values.

The management objective to support industry with raw materials while protecting the amenity values of the Forest has been the same for 10 years or more and will remain the same for the next 10 to 15 years. As valuable as the National Forest is for commercial products and recreation, its value to the public will become priceless as the expanse of open land between the towns and Forest boundary is developed and the Forest becomes the only open land.

The Forest Plan is based on the Preferred Alternative (Alternative E2) described in the Bitterroot Forest Plan Final Environmental Impact Statement. The goals and objectives of Alternative E2 are the basis for Forest management goals and objectives described in this chapter. Resource outputs for the next 50 years from this management direction are displayed.

B. Forest-wide Management Goals

The Preferred Alternative addresses the 6 major issues and management concerns that were identified at the beginning of the Forest Planning process in 1980 and the issues and concerns developed from public comments to the Draft Environmental Impact Statement and Proposed Forest Plan in 1985 and 1986. The original 6 major issues are concerned with timber harvest level, visual quality, fish and wildlife populations, water quality and soil productivity, roadless area management, and recommendations for managing two Montana Wilderness Study Act areas. Comments to the Draft Environmental Impact Statement and Proposed Forest Plan are concerned with timber harvest level, timber sale economics, silviculture, the effects of sediment on fish, riparian area management, big game habitat effectiveness and assignment, wilderness needs, visual management, and monitoring.

The following goals were developed to address these issues and concerns:

The following goals were developed to address these issues and concerns:

1. Recreation

Provide a broad spectrum of recreation opportunities.

Provide a safe trail system that protects soil and water resources.

2. Wilderness

Complete the Forest wilderness system.

Provide for the natural evolution of ecosystems within designated wilderness.

3. Wild and Scenic Rivers

Provide a wild, scenic, and recreational river system (Appendix O).

4. Visual

Maintain a high level of visual quality on landscapes seen from population centers and major travel routes, and adjacent to fishing streams.

5. Cultural

Protect significant cultural sites.

6. Research Natural Areas

Establish Research Natural Areas to represent local vegetative and ecological types.

7. **Fish and Wildlife**

Provide habitat to support viable populations of native and desirable non-native wildlife and fish.

Maintain habitat for the possible recovery of threatened and endangered species.

Maintain riparian flora, fauna, water quality and recreation activities.

8. **Range**

Manage to provide livestock forage where environmental quality can be protected and management is efficient.

9. **Noxious Weeds**

Control noxious weeds to protect resource values and minimize adverse effects on adjacent private land.

10. **Timber**

Provide sawtimber and other wood products to help sustain a viable local economy.

Seek out opportunities for biologically appropriate and cost-efficient uneven-aged management.

Provide firewood for personal and commercial use.

Provide an economically efficient sale program.

11. **Soil and Water**

Maintain soil productivity, water quality, and water quantity.

12. **Minerals**

Provide for the development of mineral and energy resources (Appendices K and N).

13. **Lands**

Coordinate management activities with the land management objectives of adjacent landowners, Indian tribes, and other government agencies.

14. **Roads**

Design transportation systems and road management programs that are responsive to public concerns and protect resource goals.

15. **Utility Corridors**

Provide utility corridors consistent with other resource goals (Appendix H).

16. **Protection**

Maintain forest stands so that pest-caused losses are reduced to acceptable levels.

17. **Fire Management**

Design fire management programs that are consistent with other resource goals (Appendices K and M).

18. **Administration**

Strive for economically efficient management.

Involve interested and affected individuals, organizations and agencies to:

- Increase understanding of resource management activities and issues.
- Obtain public input for resource management decisions.
- Prevent resource and facility damage.
- Reduce need for use restrictions, regulations and law enforcement.
- Promote a cooperative relationship between Forest managers and the public.

C. <u>Forest-wide Management Objectives</u>

1. **Resource Objectives**

The following objectives state how resources will be managed under the Forest Plan during the Plan Period. A complete understanding of the management direction can be attained by reading the Forest-wide goals and standards in this chapter, and the management area goals and standards in Chapter III.

a. **Recreation**

Inform public of seasonal recreation opportunities.

Provide for the current mix of dispersed recreation by maintaining about 50 percent of the Forest in wilderness, about 20 percent in semiprimitive motorized recreation and about 30 percent in roaded areas.

Provide for the development and maintenance of at least two travel routes for winter activities.

Provide recreation facilities at Lake Como for the elderly and handicapped.

Evaluate the need for increasing or decreasing developed recreation facilities.

Evaluate recreation residence permits, maintain those that are not in conflict with public need or other resource values, and eliminate conflicts through permit revisions or cancellations.

Restore or reconstruct about 160 miles of trail in accordance with the following criteria: amount of use, tread erosion, user safety, and seasonal problems, e.g., boggy areas.

b. **Wilderness**

Recommend areas with high wilderness attributes and longstanding support for wilderness for addition to the National Wilderness Preservation System.

Complete the Limits of Acceptable Change (LAC) analysis (Appendix K).

c. **Research Natural Areas**

Establish ten Research Natural Areas (Management Area 9).

d. **Wildlife**

Provide optimal habitat on elk winter range (Appendix G).

Maintain habitat to support viable populations of wildlife species.

Cooperate with the States of Idaho and Montana to maintain the current level of big-game hunting and trout fishing opportunities.

Maintain vegetative diversity on land where timber production is a goal of management.

Participate and cooperate in threatened and endangered species identification, recovery, and protection.

Maintain sufficient old-growth habitat on suitable timberland to support viable populations of old-growth dependent species.

e. **Fish**

Maintain habitat to support current populations of catchable trout (Appendix G).

Maintain or enhance fish habitat by:

- Maintaining riparian habitat and its potential to replace woody debris.
- Minimizing the miles of road needed for management.
- Requiring high standards for road construction and maintenance.
- Reducing sediment from existing roads.
- Dispersing timber harvest and assuring vegetative recovery prior to re-entry.

Cooperate with state agencies and local organizations to determine the cumulative effects of public and private land management on the Bitterroot River.

f. **Range**

Provide livestock forage for current actual use, about 10,000 animal unit months per year.

g. **Noxious Weeds**

Complete an evaluation of the risk of spread of noxious weeds in vegetative communities and implement control strategies.

Emphasize the use of biological control to gain the upper hand in the control of spotted knapweed and leafy spurge.

h. **Timber**

Maintain advance sale preparation at a level to provide flexibility in offering sales that are responsive to market conditions and economic efficiency.

Offer affordable sales (Appendix G).

Implement Regional Guide utilization standards by the middle of the Plan period.

Achieve a species mix of offered volume that is nearly proportional to standing inventory.

Convert high-risk or insect and disease infested stands to young, healthy stands.

i. **Water**

Maintain sufficient instream flows to support quality fish habitat.

Manage municipal watersheds to assure sustained yields of high quality water.

Manage riparian areas to prevent adverse effects on channel stability and fish habitat.

j. **Soil**

Design management activities to maintain soil productivity.

k. **Air**

Cooperate with State Air Quality Bureaus to prevent significant deterioration of air quality.

l. **Minerals**

Provide reasonable access for the exploration and development of mineral resources.

Manage common variety minerals to meet other Forest goals, objectives, and standards.

Review existing mineral withdrawals and need for continuance in accordance with the Federal Land Policy and Management Act of 1976 (Appendix I).

m. **Lands**

Pursue land adjustments that can help resolve planning issues (Appendix L).

Obtain the necessary rights-of-way for the management of Forest resources and to provide public access.

Prevent further encroachment on Forest lands by posting about 160 miles of Forest boundary.

n. **Roads**

Minimize the extent of the road system needed for resource management.

Minimize the need for capital investment funds.

Minimize adverse effects on water quality and fish habitat during construction and maintenance.

o. **Protection**

Eliminate backlog fuels.

2. Outputs and Activities by Time Periods

Table II-1 shows planned outputs and activities, and projected outputs for future periods if the Forest Plan were implemented beyond the first period. Plan period outputs and activities will be used for programming, budgeting, and attainment reporting. The budget required to implement the Forest Plan is shown in Appendix J. Appendix G contains schedules for various resources and activities. Projects may be added, deferred, or modified as a result of project environmental analysis (refer to Chapter IV, section C for a discussion of project planning).

Table II-1
Average Annual Projected Outputs and Activities by Time Period

Output or Activity	Target Item 1/	Unit of Measure	Outputs by Period: Plan 1986-1995	Projected 1996-2005	Projected 2006-2015	Projected 2016-2025	Projected 2026-2035
Facilities							
Trail const./recon.		Miles	16	16	16	16	16
Road construction							
Arterial		Miles	0	0	0	0	0
Collector		Miles	9	9	9	0	0
Local		Miles	16	12	13	21	13
Road reconstruction		Miles	6				
Fish and Wildlife							
Wildlife hab. imp.	T03	Acres	285	285	285	285	285
Fish habitat imp.	T04	Acres	5	5	5	5	5
Land exchange	T11	Acres	320				
Minerals management	T12	Cases	100				
Protection							
Fuels mgt.-FFP	T23	Acres	250				
Range livestock use	T06	M AUM	11.2	11.2	11.2	11.2	11.2
Range improvement	T07	Acres	225	225	225	225	225
Noxious weeds	T09	Acres	80	80	80	80	80
Recreation							
Developed use	T01	M RVD	103	127	155	189	230
Dispersed use	T02	M RVD					
Wilderness			129	166	208	250	304
Nonwilderness			319	409	526	671	844
Soil inventory	T10	M Acres	158				
Timber							
Green sawtimber 2/	T13	MMBF	31.2	30.8	30.6	42.3	42.7
Salvageable Material		MMBF	2.2				
Allowable Sale Qty		MMBF	33.4				
Silvicultural Exam	T15	M Acres	37				
Reforest - Approp	T16-17	Acres	430	410	380	500	530
Reforest - KV	T18-19	Acres	2882	2731	2549	3390	3550
Tbr Std Imp - App	T20	Acres	1200	1200	1200	1200	1200
Tbr Std Imp - KV	T21	Acres	300				
Landline location	T22	Miles	16				
Fuels Mgt - BD	T44	Acres	3146	3944	3816	5086	5345

1/ Target item is a code used in the budgeting process.
2/ If the Regional Guide utilization standards are not implemented the green sawtimber volume will be 29.1 MMBF and the allowable sale quantity will be 31.1 MMBF.

3. Research Natural Area Objectives

The Regional habitat types listed in Table II-2 have been assigned by the Northern Regional Guide (USDA, 1983) as the Forest's objectives for research natural area recommendations. The table also lists a candidate area representative of each assigned type. Establishment reports will be prepared for each area. See Management Area 9 for goals and standards.

Table II-2
Research Natural Area Targets

Research Natural Area Target & Code 1/	Occurrence	Candidate Research Natural Area
Scree(010)	Major	Salmon Mountain
Ponderosa pine/bluebunch wheatgrass(130)	Minor	Sawmill Creek
Ponderosa pine/Idaho fescue(140)	Minor	Sawmill Creek
Douglas-fir/bluebunch wheatgrass(210)	Minor	Sawmill Creek
Douglas-fir/ninebark(260)	Major	Boulder Creek
Douglas-fir/blue huckleberry(280)	Major	Boulder Creek
Douglas-fir/twinflower(290)	Major	Lower Lost Horse Canyon
Douglas-fir/snowberry(310)	Major	Lower Lost Horse Canyon
Douglas-fir/pinegrass(320)	Major	Lower Lost Horse Canyon
Grand fir/queencup beadlily(520)	Major	Bass Creek
Western red cedar/queencup beadlily(530)	Major	Lower Lost Horse Canyon
Grand fir/twinflower(590)	Minor	Bass Creek
Subalpine fir/queencup beadlily(620)	Major	Boulder Creek
Subalpine fir/sweet scented bedstraw(630)	Minor	Bass Creek
Subalpine fir/dwarf huckleberry(640)	Minor	East Fork
Subalpine fir/bluejoint(650)	Minor	Salmon Mountain
Subalpine fir/twinflower(660)	Major	Bass Creek
Subalpine fir/menziesia(670)	Major	Bitterroot Mtn Snow Avalanche
Subalpine fir/beargrass(690)	Major	Bitterroot Mtn Snow Avalanche
Subalpine fir/grouse whortleberry(730)	Minor	Upper Lost Horse Canyon
Subalpine fir/smooth wood-rush(830)	Major	Salmon Mtn & Sapphire Divide
Whitebark pine/subalpine fir(850)	Major	Salmon Mtn & Sapphire Divide
Alpine larch/subalpine fir(860)		Salmon Mtn & Sapphire Divide
Whitebark pine(870)		Salmon Mtn & Sapphire Divide
Beaver Ponds		East Fork
Rivers		Bitterroot River
Fresh marsh/deep		Target filled by Kootenai NF
Type I stream		Boulder Creek
Type II stream		Salmon Mountain
Cold springs		Salmon Mountain
Low production potential lakes		Salmon Mountain
Lakes without fish		Salmon Mountain
Rough fescue/Idaho fescue(Fesc/Feid)	Major	Sawmill Creek
Idaho fescue/bluebunch wheatgrass(/Agsp)	Major	Sawmill Creek
Green fescue(Fevi)	Minor	Salmon Mountain

1/ These are the common names and codes of the vegetative habitat type (Pfister et al, 1977) and other research natural areas.

4. Additional Data Requirements and Accomplishment Schedule

Table II-3 identifies additional data required to improve the Forest's data base, revise current data base inventories to new standards, and incorporate newly identified data base requirements.

Table II-3
Additional Data Requirements and Accomplishment Schedule

Data Requirement	Data Level and Information	Complete by Year
Limits of acceptable change inventories in wilderness	Forest Service Manual (FSM) 2320	1990
Trail condition inventory	FSM 7730	1988
Existing road sediment reduction inventory	ID team identification of critical road segments	1988
Grizzly bear constituent habitat elements inventory	Criteria for Mapping Grizzly Bear Habitat Constituent Elements (USDA FS Northern Region, 1983)	1995
Inventory of potential nesting sites for peregrine falcon	Peregrine Habitat Survey (USDA FS Northern Region, 10 February 1983 memo 2670)	1995
Soil inventories (level of data)		
Developed recreation (very intensive-1)	FSM 2550, Forest Service Handbook (FSH) 2509.18, Regional and Soil Conservation Service (National Cooperative Soil Survey) Standards	1989
Wilderness (extensive-4)		1995
Semiprimitive rec. (land planning-3)		1989
Timberland (land planning-3)		1989
High-use recreation areas (intensive-2)		1989
Cattle/elk conflict areas (intensive-2)		1989
Geologic and mineral potential inventory, including common variety minerals	Guide to the Preparation of Mineral Survey Reports on Public Lands (Goudarzi, 1984)	1990
Vegetative habitat typing inventory	Forest Habitat Types of Montana (Pfister et al, 1977)	1988
Inventory of stands infected by dwarf mistletoe	The 6-Class Dwarf Mistletoe Rating System (Hawksworth, 1977)	1995
Municipal watershed inventory and analysis	FSM 2543	1990
Semiprimitive area timber inventory	FSM 2410	1990

D. Research Needs

The following research needs have been identified during development of this Forest Plan; they will be evaluated by the Regional Forester for inclusion in the Regional research program proposal. It is anticipated that more research needs will become apparent during monitoring and evaluation of the Forest Plan as it is implemented.

1. Fish

Develop, or refine and improve, existing models for predicting sediment yields and the relationships to fish habitat.

Determine the effects of, need for, and management for woody material recruitment of riparian area forests for maintaining stream channel stability, sediment storage, and fish habitat.

2. Water and Soil

Develop model to predict channel effects of modified flow and sediment.

Develop model to predict cumulative effects of management on watershed values.

Determine the effects of management on soil productivity.

3. Fire

Develop reliable 1 to 3 month weather predictions for wilderness fire management program.

4. Economics

Determine future demand and values for timber.

Determine demand and value for nonmarket resources such as visual, recreation and wildlife.

5. Timber

Determine a cost-effective technique for establishing regeneration on those sites where standard techniques will not guarantee a 5-year establishment period, thus rendering the sites unsuitable.

Identify hazard rating systems and management techniques and strategies to reduce losses from root disease.

Determine reliable methods to improve seed yields in commercial conifers, including the possibilities of a potted seed orchard green house, especially for Douglas-fir.

Develop reliable operational method for estimating timber yields from uneven-aged stands in the Northern Region.

Determine suitability including productivity of lands for which current information is inadequate to project responses to timber management.

Continue to develop technique for site preparation on steep slopes occupied by pine grass and elk sedge without the use of herbicides.

6. **Noxious Weeds**

Develop noxious weed control strategies.

7. **Wildlife**

Determine optimal cover/forage relationships for big game habitat.

E. Desired Future Condition of the Forest

This section describes what the Forest will be like if the management direction contained in the Forest Plan is implemented. It summarizes the anticipated physical changes which would result from carrying out planned management practices for ten years (first decade) and for fifty years (RPA planning horizon).

The land assignments shown in Table II-4 will be maintained for the 10 to 15 year life of the Plan.

Table II-4
Land Classification

Designation and Management Areas	Montana	Idaho	Total	Remarks
Wilderness MA's 6, 7a, 7b, & 7c	359,300	460,600	819,900	76,800 acres of the 405, 200 acres of inventoried roadless are recommended to Congress.
Recreation MA 5	233,100	0	233,100	213,900 acres are inventoried roadless.
Unsuitable for timber management MA's 8a & 8b	35,500	0	35,500	30,400 acres are inventoried roadless.
Special Areas MA's 9, 10, & 11	1,600	3,600	5,200	Road corridors, campgrounds, and Research Natural Areas.
Management Areas with scheduled timber harvest MA's 1,2,3a,3b,& 3c	484,200	0	484,200	389,800 acres are suitable for timber management and 94,400 acres are intermingled lands unsuitable for timber management. 84,100 acres are inventoried roadless.
Total	1,113,700	464,200	1,577,900	Acres rounded.

1. Condition at the End of the First Decade

a. Recreation

A variety of high quality recreation areas will have been available to meet the anticipated 6 percent increase in demand for quality experiences. Recreation use will be distributed as follows:

- 25 percent in the 52 percent of the Forest that is in wilderness,
- 10 percent in the 20 percent of the Forest in semiprimitive settings,
- 47 percent in the 28 percent of the Forest that is roaded, and
- 18 percent on the 500 acres in developed recreation.

Semiprimitive recreation use and quality will be maintained since less than 5 percent of the 405,200 acres of inventoried roadless area; about 17,700 acres of the Allan Mountain, Blue Joint, Sapphire, Selway-Bitterroot, Sleeping Child, Stony Mountain, and Tolan Creek roadless areas; will have been accessed by roads, assuming Congress acts on the MWSA areas.

The Lake Como day-use area will have been expanded to handle demand.

Current hunting seasons will have been maintained as elk have been provided security in roadless areas, and roads have been closed seasonally in developed areas.

Wilderness diversity and manageability will have been enhanced by the addition of the upper Blue Joint drainage and the west side canyon mouths which provide access to the Selway-Bitterroot Wilderness to the Wilderness system, if Congress approves the recommendation.

b. Visual Quality

On the Bitterroot Mountain face overlooking the Valley, new road construction and timber harvest will not be readily visible because the size, shape, and distribution of cutting units will be matched to natural landscape patterns. Cutting will have occurred on about 10 percent of the suitable timberland or 3.5 percent of the land outside wilderness, including about 1,700 acres of shelterwood cutting and 2,000 acres of clearcutting on currently roaded lands and 500 currently roadless acres. Up to 47 million board feet of timber will have been removed and 30 miles of new road built.

On the remainder of the Forest, timber harvest and road construction will not be readily visible from major road and trail corridors but will be visible outside of these corridors. Cutting will have occurred on about 7 percent of the suitable timberland including 9,000 acres of shelterwood cutting and 16,000 acres of clearcutting. Up to 287 million board feet of timber will have been removed and 220 miles of new road built.

Visual recovery will have occurred on 23,000 acres of old cutting units and wildfire area.

c. Wildlife and Fish

Current wildlife populations and distribution are desirable and only minor changes will have occurred. Habitat diversity will have been changed only by insects, disease, and wildfire on the 70 percent of the Forest assigned to wilderness and roadless; and by the harvest of sawtimber on only 6 percent of the 30 percent outside of wilderness and roadless.

Winter forage supplies for big-game animals will have increased slightly as forest canopies were removed and forage areas treated to improve production. Thermal and hiding cover will occupy more than 40 percent of the winter range area.

Sediment levels will have been maintained below the level of effect on trout population capabilities by applying road construction and timber harvest mitigation measures which limit sediment to short term increases delivered to streams.

Riparian areas associated with fisheries streams will remain forested. Timber harvest will have been mostly individual or small group selection harvest and 50 percent of the fisheries riparian area will be old growth.

Nonfisheries riparian area vegetation and trees will have been retained for debris recruitment and 25 percent of the area will be old growth. About 2,100 acres of timber harvest openings will have occurred in these riparian areas.

d. Range

Livestock use will have been at or below the present level and will have occurred in currently existing range allotments. The demand for livestock grazing will probably have continued to decrease as commercial ranch property is subdivided. Recreation stock use in wilderness and roadless areas will have increased but forage utilization will be maintained at about current levels by promoting or requiring the use of pelletized feed.

e. Timber

A viable local forest products industry will have been maintained by offering up to 33.4 million board feet of timber per year. About 68 percent of the volume will have been harvested using the clearcut system, 28 percent by shelterwood and 4 percent by other methods. The potential for mountain pine beetle damage should have been reduced as about 57 million board feet of lodgepole pine type will have been harvested.

On suitable timberland, there will be about 56,000 acres of seedlings/saplings, 57,000 acres of poletimber, 104,000 acres of immature and mature sawtimber, and 144,000 acres of old-growth forest.

f. Water and Air

Water quantity will have been maintained with less than a 0.2 percent increase above current levels. Water quality will have been maintained by applying soil and water conservation practices and output constraints. Existing air quality conditions will have been maintained.

g. **Minerals and Energy Resources**

Oil and gas exploration will probably not have been significant. An increase in activity will depend on world energy prices and geologic favorability. Load mining for metals will probably remain at or near current levels. Increases in gold prices may cause more placer activity.

h. **Road System**

The amount of new road construction will have been limited to the minimum necessary, about 250 miles, to meet Forest objectives. The present road system will have increased by 12 percent from 2,057 to 2,307 miles. The roaded portion of the Forest will have increased by 17,700 acres from 363,400 to 381,100 acres.

2. **Condition at the End of the Fifth Decade**

a. **Recreation**

A variety of high quality recreation areas will continue to be available to meet the anticipated 260 percent increase in demand for quality experiences. Recreation use will be distributed as follows:

- 23 percent in the 52 percent of the Forest that is wilderness,
- 8 percent in the 15 percent of the Forest that is semiprimitive settings,
- 53 percent in the 33 percent of the Forest that is roaded, and
- 16 percent in the 500 acres of developed recreation sites.

Semiprimitive recreation use will have been provided for with a minor reduction in quality since a maximum of 26 percent of the inventoried roadless area may have been accessed.

Lake Como Recreation Area facilities will have been expanded to meet demand.

Current hunting seasons and numbers should continue but increased hunting pressure will require road closures.

Wilderness diversity and manageability will continue if the recommendation to add the Canyon mouths providing access to the Selway-Bitterroot Wilderness and upper Blue Joint Creek is approved by Congress.

b. **Visual Quality**

On the Bitterroot Mountain face overlooking the Valley, new road construction and timber harvest will not be readily visible because the size, shape, and distribution of cutting units will continue to be matched to natural landscape patterns. The cutover land that remains visually unrecovered will amount to 15 percent of the suitable timberland and 6 percent of the land outside existing wilderness. Up to 175 million board feet of timber will have been removed and 95 miles of new road built.

On the remainder of the Forest, timber harvest and road construction will not be readily visible from major road and trail corridors but will be visible outside of these corridors. There will have been 28,300 acres of shelterwood cutting and 58,700 acres of clearcutting that remain visually unrecovered at the end of fifth decade. This is about 25 percent of the suitable timberland in this part of the Forest. Up to 1,720 million board feet of timber will have been removed and 920 miles of new road built.

c. **Wildlife and Fish**

Minor changes in wildlife populations and distribution will have occurred. Habitat diversity will have been changed only by natural forces on the 70 percent of the Forest assigned to wilderness and roadless; and by the harvest of sawtimber on about 30 percent of the 30 percent outside of wilderness and roadless.

Winter forage supplies for big-game animals will have increased significantly as timber canopies were removed and forage areas created to improve production. Cover on winter range will have been maintained at the desirable level of 40 percent of the winter range area.

The fisheries capability in nonwilderness streams will have remained constant at about 161,200 fish.

Riparian or streamside areas of fisheries streams flowing through suitable timberland will remain forested. Timber harvest will have been limited to individual or group selection harvest and 50 percent of the fisheries riparian area will be old growth (Chapter VI).

In nonfisheries riparian areas, even-aged timber management practices will have occurred on about 40 percent of the area but 25 percent will be maintained in old growth and trees will remain throughout the area for debris recruitment.

d. **Range**

Livestock use will have been below the present level because of commercial ranch property subdivision. Recreation stock forage utilization in wilderness and roadless will have been maintained at a level that does not degrade rangeland by continued promotion and requirements to use pelletized feed.

e. **Timber**

A viable local forest products industry will have been enhanced by offering up to 43 million board feet per year. The primary harvest methods will have continued to be clearcut and shelterwood, but selection harvest in Management Area 3b will have increased from 100 acres/year to 830 acres/year. The potential for a mountain pine beetle epidemic in lodgepole pine on suitable timberland should have been eliminated. Other forest insect and disease problems will have been reduced as susceptible stands on suitable timberland were replaced by young, vigorous trees.

On suitable timberland, about 81,600 acres will be seedlings and saplings, 55,900 acres poletimber, 113,100 acres immature and mature sawtimber, and 105,300 acres old growth.

f. **Water and Air**

Water quantity will have been maintained with less than a 0.6 percent increase above the 1980 level. Water quality will have been maintained by the continued application of soil and water conservation practices and output constraints. Existing air quality conditions will have been maintained.

g. **Minerals and Energy Resources**

Oil and gas exploration may have increased substantially with development dependent on significant finds of oil, gas or carbon dioxide. Hard rock and placer activity will probably have remained at current levels.

h. **Road System**

The amount of new road construction will have been limited to the minimum necessary, about 1015 miles, to meet Forest objectives. This will have increased the present road system by 49 percent to 3,072 miles. The arterial and collector roads needed to access all suitable timberland will have been constructed. The roaded portion of the Forest will have increased from 363,400 to 484,200 acres.

F. Forest-wide Management Standards

The following standards apply to the National Forest land administered by the Bitterroot National Forest. They are intended to supplement, not replace, national and regional policies, standards and guidelines found in Forest Service Manuals and Handbooks and the Northern Regional Guide.

1. General Standards

a. As soon as practical, and subject to valid existing rights, all outstanding and future permits, contracts, cooperative agreements, and other instruments for occupancy and use of lands of the Bitterroot National Forest will be made consistent with the Forest Plan.

b. Subsequent activities affecting the Forest, including budget proposals, shall be based on the Forest Plan. Proposed implementation schedules may be changed to reflect differences between proposed annual budgets and appropriated funds. Such scheduled changes shall be considered an amendment to the Forest Plan, but shall not be considered a significant amendment, or require the preparation of an environmental impact statement, unless the changes significantly alter the long-term relationship between levels of multiple use goods and services projected under planned budget proposals as compared to those projected under actual appropriations.

(4) Discovered cultural resources will be evaluated in relation to published Advisory Council on Historic Preservation criteria for eligibility to the National Register of Historic Places.

(5) The Forest will enhance and interpret significant cultural sites for the education and enjoyment of the public when such development will not degrade the cultural property.

(6) The Forest will consult with Native American traditional religious leaders to identify sites to be protected in accordance with the American Indian Religious Freedom Act of August 11, 1978 (P.L. 95-341, 92 STAT. 469; U.S.C. 1966 (note)).

d. **Visual Quality**

(1) The time required for openings to visually recover before adjacent stands can be harvested will vary by visual quality and other management objectives as determined through application of the visual management system and project interdisciplinary team process. As a general guide, recovery in retention and partial retention areas, from middle ground viewing distances, occurs when the site is stocked with about 300 trees per acre with the dominant trees 20 feet tall. This condition is reached in 26 to 34 years from the time of harvest. Habitat types not capable of supporting 300 trees per acre generally recover in 30 years. (Planning Record: Forest Plan Notes 159 and 177). The minimum recovery period, generally associated with maximum modification VQO areas, occurs when a new forest stand is established and certified as stocked (Regional Guide, 1983).

(2) Openings created by timber harvest should be designed to blend with natural openings to the extent practical.

(3) The size, shape and location of the area between openings will be consistent with water, wildlife and visual resource considerations. Documentation of rationale and tradeoffs will be required if the proposed openings are larger than the intervening leave areas.

e. **Wildlife and Fish**

(1) The amount and distribution of old growth will be used to ensure sufficient habitat for the maintenance of viable populations of existing native and desirable non-native vertebrate species, including two indicator species, the pine marten and pileated woodpecker.

(2) Stand conditions that qualify as old growth will vary by habitat type and landform. Criteria to consider for identifying old growth include:

- large trees, generally 15 per acre greater than 20 inches dbh for species other than lodgepole pine and 6 inches for lodgepole pine;

- canopy closure at 75 percent of site potential;

- stand structure usually uneven-aged or multistoried;

- snags, generally 1.5 per acre greater than 6 inches dbh and .5 per acre greater than 20 inches;

- more than 25 tons per acre of down material greater than 6 inches diameter.

- heart rot and broken tops in large trees are common; and

- mosses and lichens are present.

(3) All snags that do not present an unacceptable safety risk will be retained.

(4) Long rotations will be prescribed to meet old-growth requirements on suitable timberland in Management Areas 1, 2, 3a, 3b, and 3c.

(5) Old-growth stands may be logged and regenerated when other stands have achieved old-growth status.

(6) Sanitation and salvage harvests may occur in stands classified as old growth if old growth characteristics are retained after logging.

(7) Cutthroat trout populations will be used as an indicator of fisheries habitat changes.

(8) Watershed project analysis will estimate the effects of sediment on fish habitat.

(9) In cooperation with the Idaho Department of Fish and Game, the need for additional salmon hatching channel capacity on the Selway River will be assessed by 1990. The facility will be expanded if additional capacity is required. The existing facility will be maintained.

(10) Beaver will be introduced into suitable riparian habitat.

(11) Elk population status will be used as an indicator of commonly hunted ungulate species and the status of their habitat.

(12) Big-game cover/forage relationships, as described in Guides for Elk Habitat Objectives (USDA, 1978), will be a consideration in planning timber management activities.

(13) The recommendations in the "Coordinating Elk and Timber Management" report will be considered during timber management and transportation planning (Lyon, et al, 1985).

(14) Manage roads through the Travel Plan process to attain or maintain 50 percent or higher elk habitat effectiveness (Lyon, 1983) in currently roaded third order drainages. Drainages where more than 25 percent of roads are in place are considered roaded. Maintain 60 percent or higher elk habitat effectiveness in drainages where less than 25 percent of the roads have been built.

(15) If, for three years running, the bull elk harvest during the first week of the hunting season exceeds 40 percent of the total bull harvest, additional fall road closures will be considered.

(16) The habitat needs of sensitive species, as listed by the Regional Forester, will be considered in all project planning.

(17) Wildlife use will have priority over livestock use on elk winter range.

f. **Threatened and Endangered Species**

(1) No formal recovery plan has been established for threatened and endangered species on the Bitterroot Forest. Specific population objectives will be established when sufficient biological information is available to do so. Cooperate and involve the Public in any interagency recovery effort.

(2) Participate in the identification and protection of threatened and endangered species and vascular plants identified as rare, pending study and proposal as threatened or endangered.

g. **Timber**

(1) All timber sales will be designed, as well as possible, to be affordable to purchasers under average market conditions at the time of sale.

(2) The allowable sale quantity, 33.4 MMBF, includes components which may not be available for the annual timber sale program due to lack of demand or because legislative action is required. These components include the following:

- Includes 2.3 MMBF of small size material not merchantable under current timber sale contract utilization standards.

- Montana Wilderness Study Act areas, Blue Joint and Sapphire, contribute 1.9 MMBF to the allowable sale quantity.

- Helicopter yarding is required to harvest 4.3 MMBF of the allowable sale quantity. Approximately 1.4 MMBF is located on lands that support high value ponderosa pine in major travel corridors and 2.9 MMBF is located in small, scattered acreages on steep slopes and/or sensitive soils that support less valuable Douglas-fir, lodgepole pine, spruce, and subalpine fir.

- Sandy, decomposed granite land types, which are difficult to develop and maintain fish habitat, contribute 5.7 MMBF to the allowable sale quantity.

- Salvageable material portion of the allowable sale quantity is 2.2 MMBF.

The components are based on the total ASQ and therefore can not be added. For example, portions of the helicopter yarding volume are included in all the other components.

If one or more components are not available or saleable the annual timber sale program will be reduced accordingly. For sawtimber sales, the program will be reduced when the volume of a component offered but unsold exceeds 10 MMBF.

(3) A variety of tree species will be planted, where habitat conditions permit, to prevent creation of monocultures that are susceptible to insect and disease epidemics (Smith, 1962).

(4) By the end of the first decade, all the reforestation backlog will be eliminated.

(5) Approved site preparation methods on land suitable for timber production include mechanical preparation, burning and spot scarification. The ground application of herbicides may be utilized to prepare planting spots if an environmental analysis indicates that other silvicultural alternatives will not meet management objectives or are significantly more costly.

(6) Establish vegetative cover on temporary roads and skid trails within two years.

(7) Stand size will generally be larger than 5 acres.

(8) Train personnel currently involved in timber sale preparation, tree marking, and timber sale administration to ensure the application of genetic principles in on-the-ground timber management activities (USDA, 1984).

(9) Implement scientifically based, efficient, and effective methods of selecting seed collection stands and procuring seeds (USDA, 1984).

(10) Participate in ongoing selective breeding projects for ponderosa pine, Douglas-fir, Engelmann spruce, and lodgepole pine (USDA, 1984).

(11) An economic analysis will be completed for all alternatives presented in detail on timber sales over 1 million board feet in size, and on capital investment transportation systems. Project alternatives will be designed to show the economic tradeoffs of different ways to implement Forest Plan standards. Project net public benefit and/or probable marketability will be analyzed and a decision made whether to continue at each of the following stages of planning:

- prior to being included in the Timber Sale Program,

- during project planning and design, and

- before advertisement of the project.

(12) Timber harvests to meet timber production objectives and related site preparation and regeneration practices will be designed so that there is reasonable assurance that stands can be restocked within 5 years after final harvest.

h. **Water, Air, and Soil**

(1) Utilize equivalent road area or similar concept to evaluate cumulative effects of projects involving significant vegetation removal, prior to including them on implementation schedules (Chatoian, 1985).

(2) Hydrologic recovery following land-disturbing activities will normally take 20 years from time of harvest. The maximum area allowed to be hydrologically unrecovered, by habitat and land type, is shown in Table II-5 (Planning Record: Forest Plan Note 129; Swanston and Swanson, 1976; Gray and Megahan, 1981; O'Laughlin and Ziemer, nd).

Table II-5
Maximum Area Allowed to be Hydrologically Unrecovered
(percent unrecovered)

Land Type 2/	Habitat Type Group 1/ HT123	HT4	HT567	RIP
-40	40	40	35	30
MN+40	40	40	30	NA
S40M60	25	30	25	25
SS+60	25	30	25	NA

1/ HT123 = Douglas-fir habitat types
HT4 = Subalpine fir/beargrass habitat type
HT567 = Moist site habitat types
RIP = Riparian habitat types
2/ -40 = All soils on slopes less than 40 percent
MN+40 = Moderately- to non-sensitive soils on 40 to 60 percent slopes
S40M60= Sensitive soils on slopes 40 to 60 percent and moderately- to non-sensitive soils on slopes over 60 percent
SS+60 = Sensitive soils on slopes over 60 percent

(3) As part of project planning, site specific water quality effects will be evaluated and control measures designed to ensure that the project will meet Forest water quality goals; projects that will not meet State water quality standards (Montana Department of Health and Environmental Sciences, nd) will be redesigned, rescheduled, or dropped.

(4) Water for nonconsumptive uses (instream flows) necessary for maintaining fishery habitat, recreational uses, channel maintenance, and aesthetics will be protected by negotiation (compacts), adjudication, special use permits or state reservations. Consumptive water uses to meet National Forest needs will be pursued through appropriate federal and state systems.

(5) Soil Survey and interpretations will be provided at an order III, the forest land planning level of detail, for the Forest outside wilderness except for high use recreation areas and rangeland which will be inventoried as indicated on Table II-3.

(6) Soil and Water Conservation Practices will be a part of project design and implementation to ensure soil and water resource protection (FSH 2509.22).

(7) Plan and conduct land management activities so that reductions of soil productivity potential caused by detrimental compaction, displacement, puddling, and severe burning are minimized.

(8) Plan and conduct land management activities so that soil loss, accelerated surface erosion and mass wasting, caused by these activities, will not result in an unacceptable reduction in soil productivity and water quality.

(9) Design or modify all management practices as necessary to protect land productivity and maintain land stability.

(10) Actively reduce sediment from existing roads. Sediment reduction measures to be considered include:

- cross-drains into vegetative filter strips away from streams;

- grass seed, fertilizer, mulch and netting on cuts and fills;

- slash filter windrows or straw bales at toe of fill in contributing areas; and

- gravel ditches and road surface.

(11) The Forest will cooperate with the Montana and Idaho Air Quality Bureaus in the State Implementation Plans. The Bitterroot National Forest is an active member of the Montana State Airshed Group and adheres to practices and policies of the State of Montana Cooperative Smoke Management Plan.

(12) Upon receipt of a Notice of Prevention of Significant Deterioration Action which may impact the wilderness air quality, the air quality values and the standards for predicting them will be identified.

(13) Protect and preserve the integrity of and maintain access to the snow survey sites and electronic SNOTEL sites shown in Table II-6.

Table II-6
Snow Survey Sites

Site Name	Site No.	Elev	Sec	T	R	MA
Ambrose	13C16	6480	28	9N	18W	1
Daly Creek*	13C39P	5780	16	5N	18W	1
Skalkaho Summit*	13C03S	7260	30	6N	17W	5
Twin Lakes*	14C8&C12	6510	32	5N	23W	5
Twelvemile*	14C13	5600	34	5N	23W	5
Lost Horse	14C07	5940	5	4N	23W	5
East Fork RS	13D1	5400	16	2N	17W	3a
Nez Perce Camp*	14D02	5580	19	1S	23W	5
Nez Perce Pass	14D01	6570	25	1S	24W	5
Saddle Mountain*	13D22	7940	5	2S	19W	3a
Gibbons Pass	13D02	7100	3	2S	19W	8a
Kit Carson	14D03	5010	4	27N	15E	11a

* SNOTEL sites

(14) Road plans and environmental analysis reports for activities in the Cow and Burnt Fork municipal watersheds will be submitted to the Montana Water Quality Bureau for review and approval.

i. **Minerals and Energy Resources**

(1) Case by case surface management restrictions will be developed for locatable, leasable and common variety minerals.

(2) Before recommendations are made on any lease application, analysis of environmental effects will be made in compliance with NEPA. Stipulations which are displayed in Appendix N and which are based upon the "Oil and Gas Leasing of Nonwilderness National Forest Lands, 1981," (Appendix K), will be recommended in accord with Management Area direction in Chapter III.

(3) Identify common variety mineral sites that are suitable for construction aggregate and compatible with management area goals and standards.

(4) Areas currently withdrawn from mineral entry will be evaluated in accordance with the provisions of Section 204 of the Federal Land Policy and Management Act of 1976 (Appendix I).

(5) Coordinate transportation system with mineral development.

(6) Consider outstanding and reserved mineral rights during project analysis.

j. **Road System**

(1) Roads will be maintained to design standards.

(2) Roads will be closed to public use if adequate road maintenance funds are not available.

(3) All roads will be designed to facilitate reestablishment of vegetative cover on disturbed areas within a reasonable time, not to exceed 3 years, after termination of a contract. If the road is necessary as a permanent addition to the National Forest transportation system, then the roadbed may not be revegetated.

Temporary roads, tractor roads, skid trails, and firelines will be waterbarred and revegetated to control erosion. Table II-7 is a guide to waterbar spacings depending on the disturbed surface gradient and erodibility of the soil.

Table II-7
Waterbar Spacing Guide

Temporary Road, Skid Trail, or Fireline Gradient (percent)	--------Waterbar Spacing (feet)--------		
	Loam/Clay Loam Soils >75% Coarse Fragments	Sandy Loam Soils >35% Coarse Fragments	Sandy Soils <35% Coarse Fragments
1 to 6	400	350	300
7 to 9	300	250	200
10 to 14	200	175	150
15 to 20	150	120	90
21 to 40	90	70	50
41 to 60	50	40	25

k. **Protection**

(1) Fire management standards, including the expected average annual acreage burned by management area, are contained in the Bitterroot Forest "Fire Management Action Plan", see Appendix M. The plan was developed after completion of the Level II fire management analysis as outlined in Forest Service Manual 5109.19. The Fire Management Action Plan will be revised annually to identify the differences between the most cost efficient fire management program determined by the Level II analysis and the fire management program funded in the current fiscal year.

(2) The time and number of planned ignition prescribed burns will be scheduled in cooperation with the State of Montana to meet air quality requirements.

(3) The fuels treatment backlog will be eliminated by the end of the first decade. Priority for treatment will be given to high-risk stands with fuels exceeding 70 tons per acre.

1. **Insect and Disease**

(1) Silvicultural prescriptions will utilize integrated pest management strategies and treatments that reduce long-term losses due to insects and diseases.

(2) Pesticides, biological agents, preventive chemicals and insecticide implants may be utilized on insects and diseases to provide short-term protection on specific sites after appropriate environmental analysis.

(3) Mountain pine beetle in lodgepole pine (Gibson and Dooling, 1982): Utilize the mortality prediction model to identify the susceptibility of lodgepole pine stands to mountain pine beetle losses and to schedule silvicultural treatments. Prescribe even-aged silvicultural systems, including clearcutting where it is optimal, to create mosaics in extensive lodgepole pine stands. Prescribe thinning in young lodgepole pine stands to maintain stand vigor and control tree size and rotation age. Preventive chemicals, like Sevimol-4(R), may be utilized to reduce losses or protect high-value sites such as campgrounds and seed orchards, after an environmental analysis is completed.

(4) Mountain pine beetle in ponderosa pine (Gibson and Dooling, 1982): Prescribe thinning in young ponderosa pine stands to reduce stand density to a level which minimizes mortality. Chemical strategies, like lethal trap trees utilizing bait and Sevimol-4(R), may be applied to protect high-value sites, after an environmental analysis is completed.

(5) Dwarf mistletoe control in lodgepole and Douglas-fir (Gibson and Dooling, 1982): Prescribe silvicultural treatments in managed stands to reduce losses to dwarf mistletoe. Treatments include clearcutting; overstory removal; controlling species composition through thinning; planting and removing infected trees from logged or burned stands.

(6) Western spruce budworm in Douglas-fir (Gibson and Dooling, 1982): Silvicultural strategies and treatments of host stands will be utilized to reduce and prevent long-term damage in timber production areas. Strategies will include presalvage of susceptible trees; and managing species, genetic composition, density, vigor, age and structure. Biological strategies, such as the use of Bacillus thuringiensis (Bt), may be utilized to reduce or prevent

damage in timber production and high-value areas such as campgrounds. Chemical strategies, like implants, may be utilized where both risk of unacceptable damage and value are high, such as seed production areas, administrative sites, and campgrounds after environmental analysis.

m. **Noxious Weeds**

(1) The primary means of preventing, containing, or controlling noxious weeds will be through vegetative management practices and by the use of biological agents such as insects, rusts, molds and other parasites on host plants. However, herbicides may be utilized to provide short term protection on specific sites, after appropriate environmental analysis.

n. **Special Uses**

(1) New outfitter and guide permits for traditional uses will be considered only when the services offered by existing outfitters are fully utilized. Proposed transfer, termination or relinquishment of permits operating at less than 100 service days will be considered for phasing out or reallocation of the service days to other current permit holders, to provide for more economic operations.

(2) Permits for new uses or uses not currently under permit will be considered.

o. **Range**

(1) Allotments may be closed if the permittee stops his or her cattle operation or if transitory range is eliminated by tree regeneration, if it is not cost effective, or if environmental quality can't be protected.

p. **Wild and Scenic Rivers**

(1) Eligible river wild, scenic or recreational values will be protected until suitability studies provide the basis for future disposition.

3. **Road Construction Standards**

The objectives of these standards are to construct roads that meet needs for intended uses yet lay lightly on the land (minimum cuts and fills), manage traffic in lieu of high road standards, and control sediment deposition in streams. As technology improves some of the numerical constraints may change to meet state-of-the-art environmental protection measures.

a. **Arterial and Major Collector Roads**

(1) Minimize road standards and resulting environmental impacts by limiting design speeds to 45 mph on arterials and 20 mph on collectors.

(2) Arterial roads will be designed double lane and major collector roads single lane.

(3) Channel water away from the road surface to minimize loss of material from the roadway. Utilize outsloping, rolling grades, culverts or other appropriate measures and structures. Culverts will be used for drainage crossings that carry water during any part of the year, and where there is need to relieve ditch water.

(4) Design and maintain for low-boy use with adequate turnout or double track. Turnouts should be located, and of adequate length to accomodate mixed traffic types.

(5) Grades will not exceed 6 percent for arterial roads, and 6 percent with pitches to 10 percent for major collector roads. Special erosion protection measures such as additional cross drains and ditch and roadway graveling will be applied to steep sections as needed. Deviations to the above may be approved by the Forest Supervisor after consideration for log haul costs, maintenance costs, erosion control, graveling, additional ditches, and improved technology.

(6) Machine marks should be left on cut slopes to catch seed and fertilizer. Cut slope seeding and fertilizing shall be completed during the first season of construction and fill slopes immediately after final blading. Native vegetation will be encouraged where it will not be a safety hazard or maintenance problem.

(7) Road maintenance operations and practices shall be conducted to protect the road investment, minimize loss of material from the roadway, and minimize erosion. Practices that will be avoided include undercutting the backslopes and leaving berms on the road surface.

(8) Sections of roads with soils that may become rutted during wet weather should be surfaced to provide an all-weather surface and prevent erosion.

b. **Minor collector and Local Roads**

(1) Machine marks left on cut slopes catch seed and fertilizer and shall be left. Cut slope seeding and fertilizing shall be completed during the first season of construction and fill slopes immediately after final blading. Native vegetation will be encouraged on permanently or temporarily closed roads and where it will not be a safety hazard or maintenance problem on open roads. Apply practices that encourage revegetation including ripping the road surfaces of closed roads, allowing native plant encroachment, and blading only when necessary.

(2) Design and maintain roads with sufficient width to accomodate planned use.

(3) Channel water away from the road surface to minimize loss of material from the roadway. Utilize outsloping, rolling grades, culverts or other appropriate measures and structures. Culverts will be used for drainage crossings that carry water during any part of the year, and where there is need to relieve ditch water.

In addition, provide drive through dips or other type cross drains where culverts and grade rolling are too widely spaced to adequately divert water. As a minimum, roads with gradients less than 4 percent should provide cross drains equal to natural drainage spacings. Cross drains on steeper gradient roads should be spaced at sufficient intervals to control rills on the road surface and rilling or gullying of fill slopes. Divert runoff onto areas of vegetative cover to provide a filter for sediment and avoid diversions onto fill slopes at natural drainages.

(4) Maximum permissible sustained grades will not exceed 8 percent where the native soil has a moderate or low erodible rating and will not exceed 6 percent where the soil erodible rating is high. Pitches from 8 to a maximum of 15 percent will be allowed when special erosion control measures are designed into the road. Pitches from 8 to 10 percent are limited to a maximum of 1000 feet and over 10 percent are limited to a maximum of 500 feet in length. Deviations to the above may be approved by the Forest Supervisor after consideration for log haul costs, maintenance costs, erosion control, graveling, additional ditches, and improved technology.

(5) Road maintenance operations and practices shall be conducted to protect the road investment, minimize loss of material from the roadway, and minimize erosion. Practices that will be avoided include undercutting the backslopes and leaving berms on the road surface.

(6) Sections of roads with soils that may become rutted during wet weather should be surfaced, traffic restricted, or otherwise managed to prevent damage.

c. **Roads in Riparian Areas**

(1) Plan transportation systems to minimize roads crossing or running parallel to streams.

(2) Avoid beaver habitat and elk wallows.

(3) Except at stream crossings, vegetative buffer strips shall be maintained between the toe of the road fill and the stream on soils that are likely to produce sediment above natural levels. In sandy soils, the minimum buffer strip should be 100 feet with an added 5 feet for each percent of land slope between the road and stream. In other soils, the width of the strip will vary by geomorphology, but as a guideline, the buffer strip should be a minimum of 25 feet wide with an added 2 feet for each percent of land slope between the road and stream (Trimble and Sartz, 1957).

(4) Windrows of baled straw, slash or other effective material shall be placed at the toe of the fill slope as sediment filters where needed. They shall be constructed during clearing operations and prior to culvert installation (Forest Plan Note No. 212)

(5) Revegetation of cut and fill slopes shall be insured through adequate measures such as grass seeding, application of mulch or special slope treatments depending on the nature of native soil.

(6) Road gradients should be 5 percent or less within 400-feet of streams or stream crossings. Where gradients exceed 5 percent, the road surface will be stabilized unless the native material resists erosion.

(7) Road surface runoff should be channeled off the road outside of riparian areas. Drive through dips, in or out slopes or cross drains with ditches may be appropriate. Some cross drainage and/or surfacing will normally be provided within 200 feet of all stream channel crossings unless native material resists erosion.

(8) Closed roads should be revegetated to prevent surface erosion.

(9) Fish passage shall be provided where roads cross fisheries streams.

(10) Prevent material from entering streams by utilizing measures noted above, removing material to appropriate disposal areas, or other effective measures.

(11) If construction cannot be avoided during periods when the soils are saturated, special measures will be taken such as installing debris basins, filters or other methods to trap sediment.

(12) Dewater live stream channels during culvert installation in soil types which are likely to increase stream sedimentation.

(13) Permanent culverts shall be installed during the initial crossing of live streams.

d. **Road Density Standards**

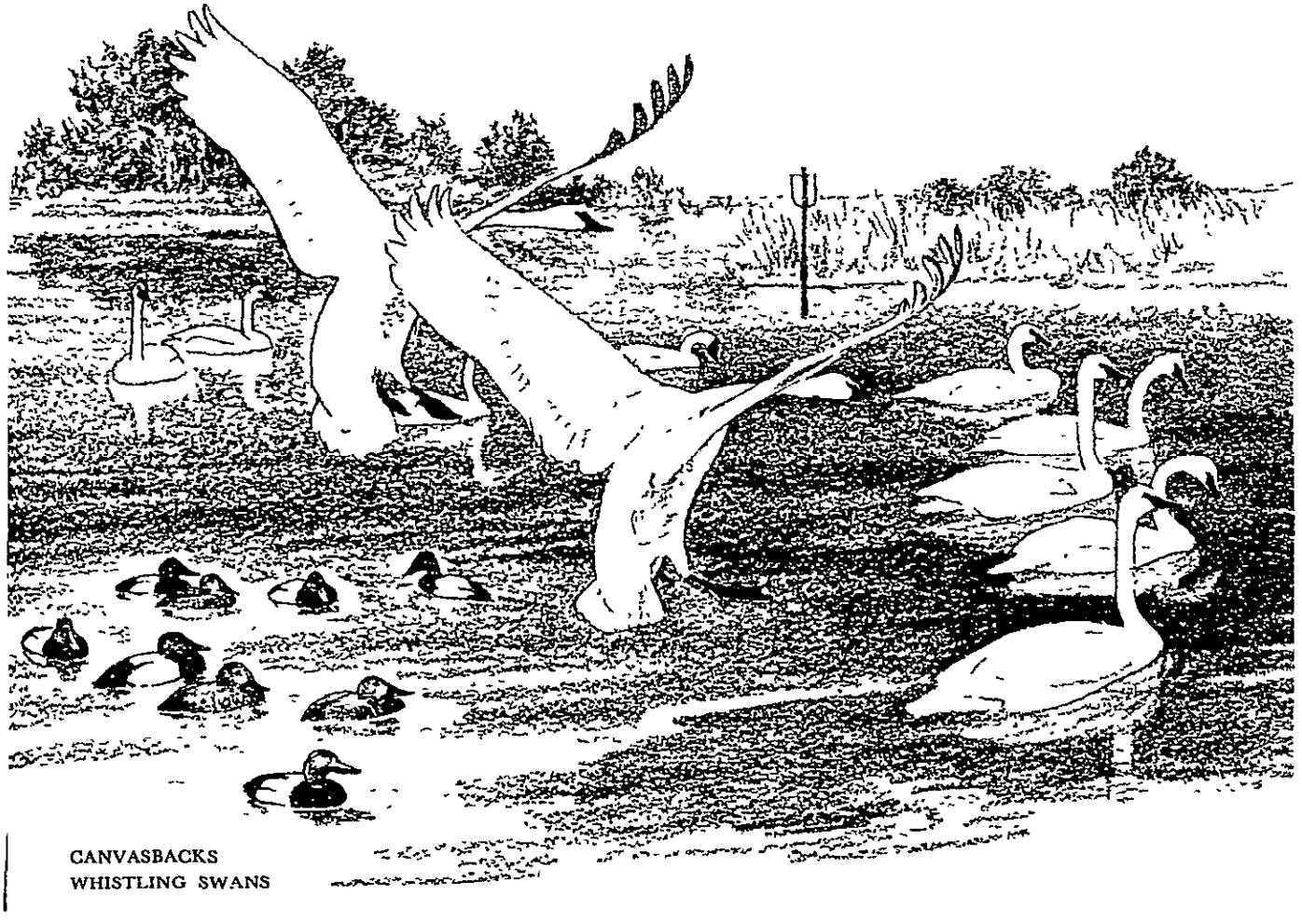
Transportation system densities will be subject to the interdisciplinary team process. As a general guide, average road densities in 3rd order and larger drainages should not exceed the densities by land type and visual quality objective displayed in Table II-8. The densities shown for maximum modification and modification visual quality objectives and the SS+60 land type are designed to protect soil and water resources. The other densities are designed to meet more restrictive visual quality objectives as well as soil and water constraints. No roads will be built to access SS+60 lands, however, it may be environmentally acceptable to cross them to access suitable timberland or to meet other resource objectives on adjacent lands.

Table II-8
Road Density Standards by Land Type and Visual Quality Objective
(miles per section)

Land Type	Visual Quality Objective: Unroaded 1/ Retention	Roaded Retention	Partial Retention	Modification/ Max. Modification
-40	No roads	4.4	5.5	6.6
MN+40	No roads	2.2	3.3	6.6
S40M60	No roads	1.1	2.2	3.8
SS+60 2/	No roads	No roads	No roads	No roads

1/ Roads will be permitted for mineral activities where construction is justified on the basis of mineral showings or data and where it is the next logical step in the development of the mineral resource.

2/ No roads will be built to access SS+60 lands, but some roads may be built across them to access suitable timberland or to meet other resource objectives on adjacent lands.



CANVASBACKS
WHISTLING SWANS

III. MANAGEMENT AREA DIRECTION

A. Introduction

The National Forest land within the Bitterroot Forest has been divided into 18 management areas (Table III-1), each with different management goals, resource potential and limitations. The management areas are shown on the accompanying map except for nonfisheries riparian areas in Management Area 3b which are too narrow and too numerous to map. Nonfisheries riparian areas are shown on 2.64"/mile map overlays in the Forest Supervisor's Office. The management area maps of record consist of a set of larger scale 2.64"/mile maps on file in the Forest Supervisor's Office.

Except for Congressionally established or special administrative boundaries, the management area boundaries are not firm lines and do not always follow easily found topographic features, such as major ridges. The boundaries represent a transition from one set of opportunities and constraints to another with management direction established for each. The boundaries are flexible to assure that the values identified are protected and to incorporate additional information gained from further on-the-ground reconnaissance and project level planning.

The Forest-wide management direction in Chapter II of this plan applies to all management areas.

This chapter describes each management area and lists the goals, management standards, schedule of management practices, and monitoring requirements for each area. More detailed information about the schedules of the management practices is in the appendices. The schedules of management practices are not intended to act as limits, but deviations will be monitored to test for long-term application.

Table III-1
Management Area Assignment

Management Area	Suitable Timberland	Management Area Acres	Percent of Forest	----Subtotal---- Acres	Percent
1	162,797	194,089	12		
2	109,506	128,785	8		
3a	70,911	103,869	7		
3b	41,452	50,431	3		
3c	5,154	7,027	<1	484,201	30
5		233,148	15	233,148	15
6		76,805	5		
7a		41,162	3		
7b		193,703	12		
7c		*508,217	32	819,887	52
8a		25,949	2		
8b		9,499	<1		
9		488	<1		
10		461	<1		
11a		4250	<1		
11b - Located within MA 1, 2, 3a, 3c, 5 & 8a					
11c - Located within MA 3a				40,647	3
Total		1,577,883	100	1,577,883	100

* September 30, 1986 edition of "Land Areas of the National Forest System" shows 511,997 acres for the Bitterroot portion of the Selway-Bitterroot Wilderness.

B. Management Area 1

1. Description

Management Area 1 contains 194,089 acres located east of the Bitterroot River and in the upper reaches of the West and East Forks, between major travel corridors and above big-game winter range. It occurs in large blocks, except for the stringers of riparian which are Management Area 3b. About 84 percent of the area is suitable for timber management. The forested area consists of all habitat and land types found on the Forest. Small parcels of nonforest and other land not suitable for timber production are intermingled with the suitable timberland. Parts of 26 range allotments are included in this area. Recreation use includes driving for pleasure, berry picking, wildlife viewing, hunting, and firewood gathering. Most of the area is middleground and background viewing from secondary Forest roads and trails.

2. Goals

Emphasize timber management, livestock and big-game forage production, which provide an added benefit of access for roaded dispersed recreation activities and mineral exploration. Assure minimum levels of visual quality, old growth, and habitat for other wildlife species.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Manage for recreation activities associated with roads and motorized equipment. The recreation opportunity spectrum setting is roaded natural (USDA, nd).

(2) Interpretive sites and trails will be compatible with timber goals.

(3) Pending resolution by Congress, that portion of the management area within the boundary of Montana Wilderness Study Act areas will be administered according to the goals and standards established for Management Area 6.

b. Visual Quality

(1) The visual quality objectives are generally maximum modification and modification (USDA, 1977).

(2) Lands generally within 300 feet of major fisheries riparian areas and adjacent to road and trail routes will be managed to maintain the partial retention visual quality objective (USDA, 1977). Management will be developed by interdisciplinary teams and documented in project environmental analysis reports.

c. **Wildlife and Fish**

(1) Utilize timber practices to manage game range to the extent that timber production is not affected.

(2) Old growth stands should be 40 acres and larger, distributed over the management area. About 3 percent of Management Area 1 suitable timberland, in each third order drainage, will be maintained in old growth. Provide 40-acre stands of old growth by coordinating management activities in this area with activities in adjacent management areas and with intermingled riparian and unsuitable management areas (USDA, 1979).

(3) Nonstructural wildlife improvements such as burning and pruning will be scheduled in Douglas-fir habitat types as shown in the wildlife habitat improvement schedule (Appendix G-2).

(4) Maintain elk habitat effectiveness through road closures as specified in the Forest-wide Standards in Chapter II (Lyon, 1983).

d. **Range**

(1) Schedule livestock use and range improvements (fences and water developments) which do not reduce tree stocking below the optimum level prescribed in silvicultural prescriptions.

(2) Limit livestock use to 50 percent of the forage production.

e. **Timber**

(1) Prescribe site preparation and regeneration methods that provide reasonable assurance of restocking within 5 years after final harvest.

(2) Reforest to species which optimize timber production.

(3) Prescribe precommercial thinning on about 800 acres per year on sites where present net value can be increased, to minimize the wildfire hazard in continuous stands of lodgepole pine, to reduce the risk of mountain pine beetle epidemics, to control dwarf mistletoe infected stands of Douglas-fir, or to minimize root rot and western spruce budworm damage (Planning Record: Forest Plan Note 171).

(4) Prescribe silvicultural systems based on the vegetative management practices in Appendix B. The shelterwood system is often most desirable in Douglas-fir and ponderosa pine types where necessary to establish regeneration and not precluded by insect and disease problems. The clearcut system is usually optimal in most lodgepole pine, spruce and diseased Douglas-fir stands.

(5) Logging systems will be the least costly, silviculturally and environmentally acceptable method with tractor yarding dominating on land type -40; cable yarding on MN+40; cable, skyline, and helicopter on S40M60; and helicopter on SS+60.

(6) The amount of hydrologically and visually unrecovered area permitted in a landscape will be determined by utilizing the equivalent clearcut acre and/or the R1R4 Sediment methods and the visual management system. The results will be reviewed and used by interdisciplinary teams and will be documented in project environmental analysis reports. (See Forest-wide standards for a description of hydrologic and visual recovery). As a general guideline, the amount of area that can be unrecovered will not exceed 45 percent on land type -40, 40 percent on land type MN+40, 29 percent on land type S40M60, and 25 percent on land type SS+60. Rotation ages for regenerated stands range from 80 to 120 years depending on habitat type and harvest schedule to meet the recovery period standards (Planning Record: Forest Plan Notes 159 and 177).

(7) Openings should be limited to 40 acres. Shelterwood cutting units should be planned so the final harvests average 10 years following the regeneration harvests.

(8) Lands unsuitable for timber management will not be scheduled for timber harvest, except salvage harvest can be programmed where necessary to meet the goals and standards of the management area.

f. **Water and Soil**

(1) Utilize watershed rehabilitation projects, such as stabilizing road cut or fill slope slumps, to repair problems.

(2) Protect snow courses as identified in Forest-wide standards in Chapter II.

(3) Soil technical support will be provided for all management activities that involve soil disturbance such as timber harvest, roading and mining, in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

(4) Site preparation methods will assure the retention of modest levels of organic matter, including woody materials 8 inches or less in diameter, to provide nutrient and ectomycorrhizal levels necessary for maintaining growth rates; while still providing an adequate mineral base for seed germination and reduction of grass competition. On dry and harsh sites, at least 10 to 15 tons per acre of residual debris is needed (Harvey, et al 1981a &1981b; Harvey, 1982). Dozer pile size and control burning will be limited to minimize the effects of intense heat and ashes on regeneration success.

g. **Lands**

(1) Avoid land exchanges that reduce the availability of timber to the wood products industry (Appendix L).

h. **Road System**

(1) Road density will be determined through transportation planning and the results will be reviewed by interdisciplinary teams and documented in project environmental analysis reports. In most cases the density should not average more than 6.6 miles per section on land types -40 and MN+40, and 3.8 miles per section on land type S40M60 in each third order drainage. No roads will be built on land type SS+60 or on land unsuitable for timber production, except where required to access adjacent suitable and roadable timberland, or for mineral activities where construction is justified on the basis of mineral showings or data and where it is the next logical step in developing the mineral resource.

i. **Protection**

(1) Fire planning will be designed to protect and enhance timber investments and values. Prompt control action will be taken on all wildfires. All types of fire suppression equipment may be used. See fire management direction in Appendix M.

(2) Treat fuels in coordination with site preparation to minimize fire danger and insect and disease problems, and assure establishment and protection of new stands. Tractor piling and burning will be the primary method on slopes less than 40 percent and broadcast and underburning on slopes over 40 percent.

(3) Evaluate annually for insect and disease problems.

(4) Apply Forest-wide insect and disease standards to help minimize losses and maximize productivity while responding to the nontimber goals, objectives and standards.

j. **Corridors**

(1) Utility corridors will be permitted that meet timber management, forage production, and visual goals and standards. (See Appendix H)

Management Area 1
194,089 acres

4. Schedule of Management Practices

Management Practice	Acres	Average Annual Volume(MMBF)3/	Miles
Plan Program (1986-1995)			
Timber sales 1/ 2/			
Clearcut	1025	12.38	
Shelterwood/seed cut	141	0.98	
Shelterwood/removal cut	142	0.73	
Selection	0	0.00	
Commercial thinning	0	0.00	
Sanitation/salvage	220	0.48	
Total	1528	14.57	
Reforestation	1166		
Precommercial thinning	800		
Dwarf mistletoe control	130		
Road construction/reconstruction			14/4
Wildlife habitat improvement 1/			
Prescribed burn	28		
Other	7		
Projected Program (1996-2005)			
Timber sales 2/			
Clearcut	1006	11.17	
Shelterwood/seed cut	157	0.83	
Shelterwood/removal cut	141	0.85	
Selection	0	0.00	
Commercial thinning	21	0.11	
Sanitation/salvage	210	0.91	
Total	1535	13.87	
Reforestation	1163		
Precommercial thinning	800		
Wildlife habitat improvement			
Prescribed burn	28		
Other	7		

1/ See Appendix G for timber sale and wildlife habitat improvement schedules.
2/ The timber cutting method acreages are not targets, they are the levels projected by the Forest planning model that represent an appropriate way of meeting the objectives of the Forest Plan.
3/ Includes non-interchangeable components.

5. Monitoring and Evaluation Requirements

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

C. Management Area 2

1. Description

Management Area 2 contains 128,785 acres of big-game winter range primarily occurring below 6,200-feet elevation on the lower forested or grassy foothills on both sides of the Bitterroot Valley. About 85 percent of the area is suitable for timber production. The forested land is mostly in the warm/dry habitat types but some of the best winter range cover areas are the forested north slopes which support cool/moist habitat types. Small parcels of unsuitable timberland are intermingled with suitable timberland. Parts of 31 range allotments are included in the management area. Recreation use includes late season big-game hunting. Most of the area is middleground and background viewing from less used travel corridors.

2. Goals

Optimize elk winter range habitat using timber and other vegetation management practices. Access will provide for mineral exploration and roaded dispersed recreation activities. Provide moderate levels of visual quality, old growth, habitat for other wildlife species, and livestock forage.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Manage for recreation activities associated with roads and motorized equipment. The recreation opportunity spectrum setting is roaded natural (USDA, nd). Interpretive sites and trails will be compatible with winter range management goals. Off-road vehicle use will be controlled during critical periods on susceptible ranges such as high-use winter range, spring range, and densely roaded fall range.

(2) Pending resolution by Congress, that portion of the management area within the boundary of Montana Wilderness Study Act areas will be administered according to the goals and standards established for Management Area 6.

b. Visual Quality

(1) The visual quality objective is modification (USDA, 1977).

c. **Wildlife and Fish**

(1) Utilize timber practices to manage big-game winter range habitat.

(2) Old growth stands should be 40 acres and larger, distributed over the management area. About 8 percent of the Management Area 2 suitable timberland, in each third order drainage, will be maintained in old growth. Provide 40-acre stands of old growth by coordinating management activities in this area with activities in adjacent management areas and intermingled riparian and unsuitable areas (USDA, 1979).

(3) Habitat improvement practices including burning and browse pruning will be scheduled in Douglas-fir, ponderosa pine, and grassland habitat types. See the wildlife habitat improvement schedule (Appendix G-2).

(4) Maintain elk habitat effectiveness through road closures as specified in the Forest-wide standards in Chapter II (Lyon, 1983).

d. **Range**

(1) Permit livestock use and range improvements which comply with winter range goals.

(2) Livestock use will be limited to 35 percent of forage.

e. **Timber**

(1) Guides for Elk Habitat Objectives (USDA Forest Service, 1978) will be followed in prescribing any timber harvest in this management area. The following timber management standards are desirable on winter range:

(a) Even-aged management.

(b) Precommercial and commercial thinning.

(c) Establish or maintain a mixture of ponderosa pine and Douglas-fir.

(d) Rotations will be greater than culmination of mean annual increment to provide for 20 to 30 percent of the rotation length in thermal cover and 55 to 65 percent of the rotation length in forested or open forage. The rest of the rotation will be in hiding cover.

(e) Timber harvest on land unsuitable for timber production is appropriate for meeting cover/forage objectives if other resource objectives including soil and water can be met.

(2) Prescribe site preparation to limit the amount of soil disturbance to that required for establishment of minimum stocking levels, and to allow for forage production on undisturbed ground.

(3) Reforest to species which optimize winter range hiding and thermal cover.

(4) Prescribe precommercial thinning on about 300 acres per year on sites where present net value can be increased or where required to control dwarf mistletoe infected stands of Douglas-fir, minimize root rot and control western spruce budworm.

(5) Prescribe silvicultural systems based on the vegetative management practices in Appendix B. The shelterwood system is often most desirable in Douglas-fir and ponderosa pine types where necessary to establish regeneration and where not precluded by insect and disease problems. The clearcut system is usually optimal in most lodgepole pine, spruce, and diseased Douglas-fir stands.

(6) The amount of hydrologically and visually unrecovered area permitted in a landscape will be determined by utilizing the equivalent clearcut acre and/or the R1R4 Sediment methods and the visual management system. The results will be reviewed and used by interdisciplinary teams and will be documented in project environmental analysis reports. (See Forest-wide standards for a description of hydrologic and visual recovery). As a general guide, the portion of an area that can be unrecovered will not exceed 40 percent on land type -40, 29 percent on MN+40, 20 percent on S40M60, and 17 percent on SS+60. Rotation ages will range from 80 to 180 years to meet cover/forage, visual quality and habitat requirements. (Planning Record: Forest Plan Note 159 and 177).

(7) Openings should be limited to 40 acres on habitat type groups HT123, HT4, and HT567. Shelterwood cutting units should be planned so that the final cuttings average 10 years following the seed cuttings.

(8) Logging systems will be the least costly, silviculturally and environmentally acceptable method with tractor yarding dominating land type -40; cable yarding on MN+40; cable, skyline, and helicopter on S40M60; and helicopter on SS+60.

f. **Water and Soil**

(1) Utilize watershed rehabilitation projects, such as road cut or fill slope slump stabilization, to repair problems.

(2) Soil technical support will be provided for all management activities that involve soil disturbance such as timber harvest, roading and mining, in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

(3) Site preparation methods will assure the retention of modest levels of organic matter, including woody materials 8 inches or less in diameter, to provide nutrient and ectomycorrhizal levels necessary for maintaining growth rates; while still providing an adequate mineral base for seed germination and reduction of grass competition. On dry and harsh sites, at least 10 to 15 tons per acre of residual debris is needed (Harvey, et al 1981a & 1981b; Harvey, 1982). Dozer pile size and control burning will be limited to minimize the affects of intense heat and ashes on regeneration success.

g. **Minerals and Energy Resources**

(1) Mineral exploration and development will have road and site restrictions between December 1 and May 15 to avoid big-game winter range conflict (Appendix N).

h. **Lands**

(1) Public ownership of winter range management areas will not be reduced and important winter ranges will be considered for addition to public ownership by exchange, purchase or donation, especially on the west side of Darby and Stevensville Ranger Districts (Appendix L).

i. **Road System**

(1) Road density will be determined through transportation planning and the results will be reviewed by interdisciplinary teams and documented in project environmental analysis reports. In most cases the density should not average more than 6.6 miles per section on land types -40 and MN+40, and 3.8 miles per section on land type S40M60 in each 3rd order drainage. No roads will be built on land type SS+60 or on land unsuitable for timber production, except where required to access adjacent suitable and roadable timberland, or for mineral activities where construction is justified on the basis of mineral showings or data, and where it is the next logical step in developing the mineral resource.

j. **Protection**

(1) Fire planning will protect and enhance winter range habitat. Fire management prescriptions will provide for big-game winter habitat. (See Appendix M).

(2) Natural and activity fuels will be treated to reduce slash depth below 1-1/2 feet to provide for big-game movement. About 25 tons/acre of down trees larger than 6-inch diameter will be left for nongame habitat if available.

(3) Fuels treatment and site preparation will be coordinated to minimize fire danger and insect and disease problems, and secure establishment and protection of new stands. Tractor piling and burning is the primary method on slopes under 40 percent; broadcast and underburning are the primary methods on slopes over 40 percent.

(4) Evaluate annually for insect and disease problems.

(5) Apply Forest-wide insect and disease standards to help optimize winter range cover/forage relationships and provide old growth.

k. **Corridors**

(1) Permit corridors that protect elk winter range habitat and meet the modification visual quality objective. (See Appendix H)

Management Area 2
128,785 acres

4. Schedule of Management Practices

Management Practice	Acres	Average Annual Volume(MMBF)3/	Miles
Plan Program (1986-1995)			
Timber sales 1/ 2/			
Clearcut	756	8.89	
Shelterwood/seed cut	500	2.71	
Shelterwood/removal cut	3	0.01	
Selection cut	0	0.00	
Commercial thinning	0	0.00	
Sanitation/salvage	180	0.40	
Total	1439	12.01	
Reforestation	1587		
Precommercial thinning	300		
Dwarf mistletoe control	130		
Road construction/reconstruction			9/1
Wildlife habitat improvement 1/			
Prescribed burn	120		
Other	28		
Projected Program (1996-2005)			
Timber sales 2/			
Clearcut	727	7.77	
Shelterwood/seed cut	312	1.50	
Shelterwood/removal cut	507	1.88	
Selection cut	0	0.00	
Commercial thinning	0	0.00	
Sanitation/salvage	180	0.78	
Total	1726	11.93	
Reforestation	1115		
Precommercial thinning	300		
Wildlife habitat improvement			
Prescribed burn	120		
Other	28		

1/ See Appendix G for timber sale and wildlife habitat improvement schedules.
2/ The timber cutting method acreages are not targets, they are the levels projected by the Forest planning model that represent an appropriate way of meeting the objectives of the Forest Plan.
3/ Includes non-interchangeable components.

5. Monitoring and Evaluation Requirements

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

D. Management Area 3a

1. Description

About 103,869 acres of Management Area 3a are in the visually sensitive foreground and middleground viewing areas along U.S. Highway 93, the Skalkaho Highway, the Sleeping Child Road, the East Fork Road, and the West Fork Road. The foreground along roads is characterized by gentle slopes and stream bottoms. The middleground is steep slopes with open Douglas-fir and ponderosa pine types on southerly exposures and mostly Douglas-fir and subalpine fir on northerly exposures. About 68 percent of the area is suitable for timber management. Parcels of unsuitable timberland are intermingled with the suitable timberland. Most of the area is elk winter range. Parts of 24 range allotments are in this management area. This area provides the road and trail access for most recreation uses on the Forest. This area is adjacent to many developed recreation sites and surrounds many of the fishing streams in Management Area 3b.

About 2 percent of this area (2,500 acres) is located in Signal Creek, which is characterized by a subalpine cirque basin supporting spruce, subalpine fir, and whitebark pine on the subalpine fir/woodrush habitat type. The area is interspersed with small, wet meadows and is excellent elk summer and fall range. The area receives a lot of big-game hunting. The road to Burnt Fork Dam traverses the area.

The Cow Creek watershed, located between Mill and Sheafman Creeks, is presently being utilized as the water source for the town of Pinesdale and is therefore a municipal watershed. The portion of Cow Creek above the water system is approximately 755 acres and is all National Forest land. The lower half of the municipal watershed has been roaded and timber has been harvested.

2. Goals

Maintain the partial retention visual quality objective and manage timber. Emphasize roaded dispersed recreation activities, old growth, and big-game cover. Provide moderate levels of timber, livestock forage, and big-game forage. Restrict road density where necessary to meet visual objectives but provide access as needed for mineral exploration.

Manage Signal Creek to provide elk security.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Manage to provide recreation opportunities associated with main access roads and fishing streams. Most of the area that can be roaded is already roaded. Areas with sensitive soils and steep slopes, including some sites along Skalkaho, Daly, and Sleeping Child Creeks, and the West Fork River will remain unroaded. The recreation opportunity spectrum setting is roaded natural (USDA, nd).

(2) Interpretive sites and trails will be compatible with the partial retention objective.

(3) Off-road vehicle use will be restricted during critical periods on susceptible ranges such as high-use winter range, spring range, and densely roaded fall range.

(4) Pending resolution by Congress, that portion of the management area within the boundary of Montana Wilderness Study Act areas will be administered according to the goals and standards established for Management Area 6.

b. Visual Quality

(1) The visual quality objective is partial retention (USDA, 1977).

(2) Visually unacceptable, existing timber harvest units, including units in the Spoon-McCoy, Smith Creek, and Moose Ridge areas, will be rehabilitated by modifying unit edges to meet the partial retention objective.

c. Wildlife and Fish

(1) Utilize timber practices to manage big-game winter range habitat to the extent that the visual quality objective of partial retention is maintained.

(2) Old growth units should be 40 acres and larger, distributed over the management area. About 8 percent of the Management Area 3a suitable timberland in each third order drainage will be maintained in old growth. Provide 40-acre stands of old growth by coordinating management activities in this area with activities in adjacent management areas especially Management Area 3b, riparian areas (USDA, 1979).

(3) Wildlife habitat improvements such as burning and browse pruning will be scheduled in Douglas-fir, ponderosa pine, and grassland as long as they comply with the partial retention visual quality objective.

(4) Maintain elk habitat effectiveness through road closures as specified in the Forest-wide standards in Chapter II (Lyon, 1983).

(5) Close the road through Signal Creek to motorized vehicles during hunting season.

d. **Range**

(1) Livestock forage use will be limited to 35 percent on partial retention big game winter range and 50 percent on big game summer range.

(2) All range improvements shall comply first with partial retention objectives and with elk winter range habitat objectives.

e. **Timber**

(1) Reforest to species which are silviculturally and visually desirable.

(2) Prescribe precommercial thinning on about 100 acres per year on sites where present net value can be increased, to minimize the hazard from future wildfire in continuous stands of lodgepole pine, to reduce the risk of mountain pine beetle epidemics, to control dwarf mistletoe infected stands of Douglas-fir, or to minimize root rot and western spruce budworm damage (Planning Record: Forest Plan Note 171).

(3) Prescribe silvicultural systems based on the vegetative management practices in Appendix B. To maintain visual quality the preferred silvicultural system is shelterwood.

(4) The most efficient, visually and silviculturally acceptable logging systems will be utilized along with partial retention road density standards.

(5) The amount of hydrologically and visually unrecovered area permitted in a landscape will be determined by utilizing the equivalent clearcut acre and/or the R1R4 Sediment methods and the visual management system. The results will be reviewed and used by interdisciplinary teams and will be documented in project environmental analysis reports. (See Forest-wide standards for a description of hydrologic and visual recovery period). As a general guide, the amount of area that can be unrecovered will not exceed 22 percent on land type -40, 18 percent on land type MN+40, 14 percent on land type S40M60, and 10 percent on land type SS+60. Rotation ages will average 135 years on land type -40, 165 years on land type MN+40, 210 years on land type S40M60, and 300 years on land type SS+60. (Planning Record: Forest Plan Notes 159 and 177).

(6) Openings created by timber harvest should be designed to blend with natural-sized openings. They will normally be 5 to 15 acres, but could be larger to blend with natural landscape patterns and to control insects and diseases.

(7) Lands unsuitable for timber management will not be scheduled for timber harvest, except salvage can be programmed where necessary to meet the goals and standards of the management area.

f. **Water and Soil**

(1) Utilize watershed rehabilitation projects, such as road cut or fill slope slump stabilization, to repair problems.

(2) Protect snow courses as identified in the Forest-wide standards in Chapter II.

(3) Soil technical support will be provided for all management activities that involve soil disturbance such as timber harvest, roading, and mining, in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Provide recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

(4) Site preparation methods will assure the retention of modest levels of organic matter, including woody materials 8 inches or less in diameter, to provide nutrient and ectomycorrhizal levels necessary for maintaining growth rates; while still providing an adequate mineral base for seed germination and reduction of grass competition. On dry and harsh sites, at least 10 to 15 tons per acre of residual debris is needed (Harvey, et al 1981a & 1981b; Harvey, 1982). Dozer pile size and control burning will be limited to minimize the effects of intense heat and ashes on regeneration success.

g. **Lands**

(1) Consolidate landownership so that visual quality objectives can be met (Appendix L).

h. **Road System**

(1) Road densities will be determined through transportation planning and the results will be reviewed by interdisciplinary teams and documented in project environmental analysis reports. In most cases the density should not average more than 5.5 miles per section on land type -40, 3.3 miles per section on land type MN+40, and 2.2 miles per section on land type S40M60 in each third order drainage. No roads will be built on land type SS+60 or on land unsuitable for timber production, except where required to access adjacent suitable and roadable timberland, or for mineral activities where construction is justified on the basis of mineral showings or data, and where it is the next logical step in developing the mineral resource.

(2) In addition to following the Forest-wide standards for road construction, the following standards may be required to meet the partial retention visual quality objective:

- Clearing: Vary clearing width and clearing edge tree density. Retain trees in the fill slope. Treat unnatural appearing debris so it is subordinate to the characteristic landscape.

- Cut and fill slope construction and treatment: End haul where needed to meet the visual objectives. Leave the slope rough to minimize vegetative recovery time. Hand planting, mulching, covering with topsoil, and fertilization will be done when needed. Soil disturbance should be subordinate to the characteristic landscape.

Structures: Design and/or place all structures to be compatible with the characteristic landscape.

Screening: Roads in this management area should be screened so they are subordinate to the natural characteristic landscape from visually significant viewpoints.

i. **Protection**

(1) Fire planning direction will emphasize control measures that protect visual quality. See Appendix M.

(2) Treat fuels in coordination with site preparation to minimize fire danger and insect and disease problems, and assure establishment and protection of new stands. Treatment will be compatible with the partial retention visual quality objective. Broadcast burning and underburning will be the primary methods of slash treatment. Burned piles and charred debris in road or trail foregrounds will be minimized.

(3) Evaluate annually for insect and disease problems.

(4) Apply Forest-wide insect and disease standards to help meet the visual goals and provide timber.

j. **Corridors**

(1) This management area is identified as an "avoidance" area because of the visual concerns along major travel routes. However, utilities that meet the visual quality objective will be permitted. (See Appendix H)

Management Area 3a
103,869 acres

4. Schedule of Management Practices

Management Practice	Acres	Average Annual Volume(MMBF)3/	Miles
Plan Program (1986-1995)			
Timber sales 1/ 2/			
Clearcut	59	0.77	
Shelterwood/seed cut	179	2.18	
Shelterwood/removal cut	0	0.00	
Selection	0	0.00	
Commercial thinning	0	0.00	
Sanitation/salvage	45	0.10	
Total	283	3.05	
Reforestation	238		
Precommercial thinning	100		
Dwarf mistletoe control	40		
Road construction/reconstruction			1/1
Wildlife habitat improvement 1/			
Prescribed burn	60		
Other	15		
Projected Program (1996-2005)			
Timber sales 2/			
Clearcut	58	.71	
Shelterwood/seed cut	248	1.15	
Shelterwood/removal cut	179	0.64	
Selection	0	0.00	
Commercial thinning	0	0.00	
Sanitation/salvage	40	0.18	
Total	525	2.68	
Reforestation	306		
Precommercial thinning	100		
Wildlife habitat improvement			
Prescribed burn	60		
Other	15		

1/ See Appendix G for timber sale and wildlife habitat improvement schedules.
2/ The timber cutting method acreages are not targets, they are the levels projected by the Forest planning model that represent an appropriate way of meeting the objectives of the Forest Plan.
3/ Includes non-interchangeable components.

5. Monitoring and Evaluation Requirements

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

E. Management Area 3b

1. Description

Management Area 3b contains 50,431 acres of riparian habitat. This area supports abundant and diverse vegetative conditions and the most productive sites on the Forest. It includes 100 feet on either side of smaller streams or the area defined by water-influenced vegetation, whichever is greater. Two types of areas are included: 15,790 acres of land adjacent to 400 miles of streams which support trout fisheries; and 34,641 acres of nonfisheries riparian area along about 1,400 miles of streams and draws. These riparian areas are surrounded by or are inclusions within Management Areas 1, 2, and 3a. About half the fishing streams have a road parallel to them.

Management Area 3b has the highest concentration of resource values on the Forest and the most diverse plant and animal ecosystems. It receives the highest concentration of dispersed recreation use including hiking, fishing, and hunting, and is sensitive foreground viewing from major road and trail corridors. It has the most productive commercial timber sites characterized by moist habitat types, including subalpine fir/bedstraw, and subalpine fir/beadlily. About 82 percent of the area is suitable for timber management. Small parcels of unsuitable timberland are intermingled with the suitable timberland. Parts of 34 cattle allotments are included in this management area and about 155 miles of fisheries streams flow through them. The vegetative and physical characteristics of about 30 percent of the area within allotments (or 7 percent of the fisheries area) have been degraded somewhat due to problems with cattle distribution.

2. Goals

Manage riparian areas to maintain flora, fauna, water quality and water-related recreation activities. Emphasize water and soil protection, dispersed recreation use, visual quality, and old growth. Provide low levels of timber harvest, livestock forage, and big-game forage on fisheries riparian areas, and moderate levels of timber harvest and forage on nonfisheries riparian areas. Roading in riparian areas will be restricted to meet water quality and fish objectives.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Manage for recreation activities associated with lakes and streams.

(2) The recreation opportunity spectrum setting is "roaded natural" except for small unroaded areas associated with the steep slopes of Management Area 3a (USDA, nd).

(3) No developed or dispersed recreation facilities other than trails and trail bridges will be built.

(4) Trails will be built or relocated outside the riparian zone where necessary to protect the riparian ecosystem and where terrain permits.

(5) Existing facilities will be rehabilitated to protect the riparian zones from human impact.

(6) Interpretive information about wildlife habitat will be provided around existing recreation sites such as Indian Trees Campground.

(7) Pending resolution by Congress, that portion of the management area within the boundary of Montana Wilderness Study Act areas will be administered according to the goals and standards established for Management Area 6.

b. Visual Quality

(1) The visual quality objective is partial retention. Management activities will be subordinate to the natural character of the landscape (USDA, 1977).

c. Wildlife and Fish

(1) Nonfisheries riparian areas will be managed to provide for:

- old growth and woody debris recruitment to prevent degradation of stream channel conditions, water quality,
- down stream fisheries capability, and
- wildlife habitat.

(2) Timber management activities will be programmed to meet fisheries, water quality, and wildlife objectives.

(3) Stream channel equilibrium and downstream fisheries habitat capability will be maintained by protecting the riparian characteristics needed to naturally filter overland flows through riparian areas, stabilize stream channels, and provide woody debris for stream sediment traps.

(4) Interdisciplinary teams will analyze the effect of each project on riparian areas and will document the analysis and management recommendations in project environmental analysis reports. The analysis will consider riparian characteristics including:

- defined channel presence;
- debris dam presence, kind, and size;
- subsurface flow; and
- vegetation size, density, and kind.

(5) Fisheries management activities will be designed to maintain existing habitat capability, as measured by: substrate embeddedness, channel morphology, cover and other habitat variables judged to potentially affect fisheries production. Where Forest streams have been degraded, management actions will be initiated to correct the source of the damage and rehabilitate the damaged habitat.

(6) The Forest will rely on fisheries habitat monitoring requirements to assure existing capability is maintained, and to validate the assumption that management activities can be compatible with fisheries habitat. The fisheries habitat monitoring program will be initiated and maintained along streams representative of major geologic types to be developed on the Forest, and on specific projects where there is moderate to high risk to fisheries habitat. The monitoring program will provide statistically sound data on substrate and/or free matrix particle embeddedness, and will be related to measured streamflows, and sediment input and transport data. In addition, aquatic invertebrate and fish population data will be gathered where appropriate, and transects of channel morphology and cover characteristics will be established in representative treatment areas. A report on the status of the findings will be prepared annually.

(7) Old growth will be available to maintain viable wildlife populations on traditional ranges. The effect of timber harvest on old growth amount, location, and kind will be documented in project environmental analysis reports.

(8) Standards to maintain stream channel equilibrium, fisheries habitat capability, and old growth should result in about 50 percent old growth in fisheries riparian areas and 25 percent old growth in nonfisheries riparian areas. Riparian old growth should be coordinated with adjacent management area old growth to provide for adequate distribution and 40 acre or larger units.

(9) Specific policy and management practices concerning riparian areas will be described in a Forest supplement to the Forest Service Manual. Practices and policy will be periodically updated based on current research and experience.

(10) Wildlife habitat improvement projects such as planting and browse pruning will be scheduled to maintain existing habitat capability. Fish habitat improvement projects such as pool creation and fish barrier removal will be scheduled when desirable to increase existing fisheries capability.

(11) Maintain the elk habitat effectiveness standards of the surrounding management areas through road closures as specified in the Forest-wide standards in Chapter II (Lyon, 1983).

(12) Manage roads so open road mileage adjacent to fisheries streams is limited to the current level.

d. **Range**

(1) All improvements shall comply with the riparian habitat and visual quality goals.

(2) Along fisheries streams, the current physical and biological characteristics will be maintained as a minimum. Management prescriptions will be formulated to encourage shrub regeneration and streambank cover.

(3) No new allotments will be created in fisheries riparian areas. Additional structural improvements will be scheduled to control cattle use.

(4) Range use will be coordinated with adjacent management areas so that use does not exceed 35 percent on big game winter range and 50 percent on big game summer range. Allotment management plans will establish specific utilization standards for shrubs and grasses within these standards.

e. **Timber**

(1) Reforest to species which enhance riparian ecosystems.

(2) Precommercial and commercial thinning generally are not prescribed in fisheries riparian areas.

(3) Prescribe silvicultural systems based on the vegetative management practices in Appendix B. The preferred silvicultural system in fisheries riparian areas is individual tree or group selection harvest with cutting cycles which average 20 years. The preferred system in nonfisheries riparian areas is shelterwood.

(4) The most efficient silviculturally acceptable logging systems will be utilized. Riparian zone soils will be protected by utilizing cable, skyline, and helicopter yarding systems and by designating tractor skid trails. On wet soils, tractor skidding will be restricted to snow covered or frozen ground.

(5) The amount of hydrologically and visually unrecovered area permitted in a landscape will be determined by utilizing equivalent clearcut acre and/or R1R4 Sediment methods and the visual management system. The results will be reviewed and used by interdisciplinary teams and will be documented in project environmental reports. (See Forest-wide standards for a description of hydrologic and visual recovery). As a general guide, the amount of area that can be visually unrecovered will not exceed 22 percent in land type -40, and 14 percent on land type S40M60. The average harvest age necessary to meet the recovery rates is 180 years. (Planning Record: Forest Plan Note 159 and 177)

(6) Openings created by timber harvest shall be designed to blend with natural size openings. Group selection openings shall be limited to 2 acres on all habitat type groups.

(7) Lands unsuitable for timber management will not be scheduled for timber harvest, except salvage can be programmed where necessary to meet the goals and standards of the management area.

(8) All silvicultural prescriptions will coordinate riparian harvest with adjacent management areas.

f. **Water and Soil**

(1) Utilize watershed rehabilitation projects, such as road cut or fill slope slump stabilization, to repair problems.

(2) Soils technical support will be provided for all management activities that involve soil disturbance such as timber harvest, roading and mining in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Provide recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

(3) Site preparation methods will assure the retention of modest levels of organic matter, including woody materials 8 inches or less in diameter, to provide nutrient and ectomycorrhizal levels necessary for maintaining growth rates, while still providing an adequate mineral base for seed germination and reduction of grass competition. Slash disposal will be designed to minimize the effects of intense heat and ashes on regeneration success.

g. **Minerals and Energy Resources**

(1) When issuing oil and gas leases and approving operating plans, allow no surface-disturbing activities, unless specially designed, within 300 feet of the normal high water line of spawning streams (Appendix N).

(2) Allow no surface occupancy in wetlands and floodplains.

h. **Lands**

(1) New or revised special uses shall provide provisions for maintenance of instream flows to maintain existing fisheries.

(2) The isolated 40-acre parcels along the Bitterroot River will be maintained in public ownership (Appendix L).

i. **Road System**

(1) Roads can be constructed across fisheries riparian areas to access adjacent roadable management areas.

j. **Protection**

(1) Fire management prescriptions will be designed to maintain the partial retention visual quality objective and riparian ecosystem attributes. (Appendix M).

(2) Treat fuels in coordination with site preparation to minimize fire danger and insect and disease problems, and assure establishment and protection of new stands.

(3) Slash will be treated to prevent it from being carried downstream during high water periods.

(4) About 25 tons/acre of dead and down trees greater than 6 inches in diameter should be left, where available, to provide habitat for nongame and small game wildlife.

(5) Burned piles and charred debris in road and trail foregrounds will be minimized.

(6) Evaluate annually for insect and disease problems.

(7) Apply Forest-wide insect and disease standards to help assure the maintenance of old-growth and wildlife habitat and provide timber.

k. **Corridors**

(1) The fisheries and wetland portion of this management area are utility corridor "avoidance" areas and the nonfisheries riparian areas are available for utility crossings that meet management area goals and standards. (See Appendix H)

Management Area 3b
50,431 acres

4. Schedule of Management Practices

Management Practice	Acres	Average Annual Volume(MMBF)3/	Miles
Plan Program (1986-1995)			
Timber sales 1/ 2/			
Clearcut	0	0.00	
Shelterwood/seed cut	210	3.21	
Shelterwood/removal cut	20	0.10	
Selection	100	0.19	
Commercial thinning	0	0.00	
Sanitation/salvage	55	0.12	
Total	385	3.62	
Reforestation	310		
Road Construction			1
Precommercial thinning	0		
Wildlife/fish habitat improvement 1/			
Prescribed burn	12		
Other wildlife practices	3		
Place boulder clusters	5		
Projected Program (1996-2005)			
Timber sales 2/			
Shelterwood/seed cut	210	3.19	
Shelterwood/removal cut	210	0.49	
Selection	138	0.25	
Commercial thinning	13	0.07	
Sanitation/salvage	65	0.28	
Total	636	4.28	
Reforestation	348		
Precommercial thinning	0		
Wildlife habitat improvement			
Prescribed burn	12		
Other	3		

1/ See Appendix G for timber sale, wildlife, and fish habitat improvement schedules.
2/ The timber cutting method acreages are not targets, they are the levels projected by the Forest planning model that represent an appropriate wayyof meeting the objectives of the Forest Plan.
3/ Includes non-interchangeable components.

5. Monitoring and Evaluation Requirements

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

F. Management Area 3c

1. Description

Management Area 3c contains 7,027 acres of visually sensitive foreground and middleground viewing area along access routes to the Selway-Bitterroot Wilderness and adjacent to several developed recreation sites. The topography is characterized by glaciated valleys with wide, flat stream bottoms and steep, often rocky, trough walls. The valley bottom vegetation ranges from ponderosa pine on dry benches to spruce, grand fir, subalpine fir, and western red cedar. The south-facing trough walls generally support dry site ponderosa pine and Douglas-fir. The north-facing trough walls support moist site habitat types including subalpine fir/menziesia and tree species including spruce, subalpine fir, Douglas-fir, and western larch. About 73 percent of the area is suitable timberland. Unsuitable timberland is intermingled with the suitable timberland. Most of the area is big-game winter range. The streams that traverse these areas are a part of MA 3c. The Lake Como, Lost Horse, and West Fork portions receive concentrated recreation use such as picnicking, camping, fishing, and berry picking.

2. Goals

Maintain the retention visual quality objective and manage timber. Emphasize dispersed recreation activities which will enhance the use of adjacent developed recreation sites and wilderness, and not degrade old growth, big-game cover and fish. Provide low levels of timber harvest, livestock forage, and big-game forage. Limit road density as necessary to meet visual objectives but provide access, as needed, for mineral exploration.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Manage for recreation access to the Selway-Bitterroot Wilderness and for opportunities associated with Lake Como.

(2) The recreation opportunity spectrum setting is roaded natural, however, portions will not be roaded because of visual, soil and water constraints (USDA, nd).

(3) Interpretive sites and trails will be constructed near developed recreation sites and will be compatible with retention objectives.

b. **Visual Quality**

(1) The visual quality objective is retention (USDA, 1977).

c. **Wildlife and Fish**

(1) Manage the riparian areas in this management area in accordance with the fisheries and nonfisheries standards described in Management Area 3b.

(2) Timber management practices will be utilized, in addition to direct habitat improvement practices, to manage big-game winter range to the extent that the retention visual quality objective is maintained.

(3) Wildlife and fish habitat improvements such as burning, browse pruning, and woody debris recruitment will be scheduled in habitat type HT123 and in riparian zones as long as they comply with the retention visual quality objective.

(4) Maintain elk habitat effectiveness through road closures as specified in the Forest-wide standards in Chapter II (Lyon, 1983).

(5) Old growth stands should be 40 acres and larger, distributed over the management area. Over 8 percent of non-riparian suitable timberland in each separate piece of Management Area 3c will be maintained in old growth. Over 25 percent of riparian area suitable for timber production in each separate piece of Management Area 3c will be maintained in old growth. Riparian and non-riparian old growth will be coordinated to assure that old growth stands are at least 40 acres. (USDA, 1979).

d. **Range**

(1) Livestock forage use will be limited to 35 percent on big game winter range and 50 percent on big game summer range.

(2) All range improvements shall comply with the visual, big game and fish goals, objectives, and standards.

e. **Timber**

(1) Reforest to species which optimize visual quality, recreation, big game cover and fish habitat.

(2) Reforest to species which optimize visual quality, recreation, big game cover and fish habitat.

(3) Precommercial and commercial thinning will not be prescribed to meet timber objectives.

(4) Prescribe silvicultural systems based on the vegetative management practices in Appendix B. To maintain visual quality, the preferred silvicultural system in Douglas-fir and moist site mixed conifer habitat types is shelterwood, in subalpine fir/beargrass habitat type which supports mostly lodgepole pine it is clearcut, and in riparian zones it is selection cutting with a 20-year cycle.

(5) The most efficient, visually and silviculturally acceptable logging systems will be utilized in conjunction with the restrictive road density.

(6) The amount of hydrologically and visually unrecovered area permitted in a landscape will be determined by utilizing the equivalent clearcut acre and/or the R1R4 Sediment methods and the visual management system. The results will be reviewed and used by interdisciplinary teams and will be documented in project environmental analysis reports. (See Forest-wide standards for a description of hydrologic and visual recovery). As a general guide, the amount of area that can be visually unrecovered will not exceed 15 percent on land type -40, 13 percent on land type MN+40, 11 percent on land type S40M60, and 8 percent on land type SS+60. Rotation ages necessary to meet these recovery rates are 195 years on land type -40, 225 years on MN+40, 270 years on S40M60, and 360 years on SS+60. (Planning Record: Forest Plan Notes 159 and 177).

(7) Openings created by timber harvest will be designed to blend with natural openings. They will normally be less than 7 acres but could be larger to blend with natural landscapes. In riparian areas they will be less than 2 acres.

(8) Shelterwood cutting units should be planned so the final harvests average 10 years following the regeneration harvests.

(9) Lands unsuitable for timber management will not be scheduled for timber harvest, except salvage harvest can be programmed where necessary to meet the goals and standards of the management area.

f. **Water and Soil**

(1) Soil technical support will be provided for all management activities that involve soil disturbance; such as timber harvest, roading and mining; in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Provide recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

(2) Site preparation methods will assure the retention of modest levels of organic matter, including woody materials 8 inches or less in diameter, to provide nutrient and ectomycorrhizal levels necessary for maintaining growth rates; while still providing an adequate mineral base for seed germination and reduction of grass competition. On dry and harsh sites, at least 10 to 15 tons per acre of residual debris is needed (Harvey, et al 1981a &1981b; Harvey, 1982). Dozer pile size and control burning will be limited to minimize the affects of intense heat and ashes on regeneration success.

g. **Minerals and Energy Resources**

(1) Oil and gas leases and operating plans will comply with land management direction which limits road building to protect resources (Appendix N).

h. **Lands**

(1) Consolidate landownership so visual quality objectives can be met (Appendix L).

i. **Road System**

(1) Road densities will be determined through transportation planning and the results will be reviewed by interdisciplinary teams and documented in project environmental analysis reports. In most cases the density should not average more than 4.4 miles per section on land type -40, 2.2 miles per section on land type MN+40, and 1.1 miles per section on land type S40M60 in each separate parcel of this management area. No roads will be built on land type SS+60 or on land unsuitable for timber production, except where required to access adjacent suitable and roadable timberland, or for mineral activities where construction is justified on the basis of mineral showings or data, and where it is the next logical step in developing the mineral resource.

(2) In addition to the Forest-wide standards for road construction, the following standards may be required on specific viewsheds to meet the retention visual quality objective :

- Clearing: Vary clearing width and clearing edge tree density. Retain trees in the fill slopes. Treat unnatural appearing debris so that it is subordinate to the characteristic landscape.

- Cut and fill slope construction and treatment: End haul where required to meet the visual objectives. Leave the slope rough to minimize vegetative recovery time. Hand planting, mulching, placing top soil, and fertilization will be done when needed. Soil disturbance should be subordinate to the characteristic landscape.

- Structures: Design and/or place all structures to be compatible with the natural characteristic landscape.

- Surfacing: Use dust retardant, gravel, or other surfacing material.

- Screening: Roads in this management area should be screened so they are not evident from visually significant view-points.

j. **Protection**

(1) Fire management will emphasize protection of visual quality (see Appendix M).

(2) Treat fuels in coordination with site preparation to minimize fire danger and insect and disease problems, and assure establishment and protection of the new stand. Treatment will be compatible with the retention visual quality objective. Jackpot and underburning will be the primary methods of slash treatment. Burned piles and debris in road or trail foregrounds will be minimized.

(3) Evaluate annually for insect and disease problems.

(4) Apply Forest-wide insect and disease standards to help meet and maintain visual quality.

k. **Corridors**

(1) This is a utility corridor "avoidance" management area because of the sensitive viewing areas along the Bitterroot Mountains. However, utilities that meet the retention visual quality objective are permitted. (See Appendix H)

Management Area 3c
7,027 acres

4. **Schedule of Management Practices**

Management Practice	Acres	Average Annual Volume(MMBF)3/	Miles
Plan Program (1986-1995)			
Timber Sales 1/ 2/			
Clearcut	2	0.02	
Shelterwood/seed cut	9	0.09	
Shelterwood/removal cut	0	0.00	
Selection	0	0.00	
Commercial thinning	0	0.00	
Sanitation/salvage	1	0.01	
Total	12	0.12	
Reforestation	11		
Precommercial thinning	0		
Road construction/reconstruction			0/0
Projected Program (1996-2005)			
Timber Sales 2/			
Clearcut	3	0.04	
Shelterwood/seed cut	9	0.06	
Shelterwood/removal cut	10	0.05	
Selection	2	0.01	
Commercial thinning	0	0.00	
Sanitation/salvage	3	0.01	
Total	27	0.17	
Reforestation	12		
Precommercial thinning	0		

1/ See Appendix G for timber sale and wildlife habitat improvement schedules.
2/ The timber cutting method acreages are not targets, they are the levels projected by the Forest planning model that represent an appropriate way of meeting the objectives of the Forest Plan.
3/ Includes non-interchangeable components.

5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

G. Management Area 5

1. Description

Management Area 5 contains 233,148 acres of semiprimitive recreation and elk security areas. The inventoried roadless area names and acres and the semiprimitive recreation area names and acres are shown below. The semiprimitive recreation areas include the inventoried roadless acres plus some adjacent roaded lands.

Inventoried Roadless Area Name	Inventoried Roadless Area Acres	Semiprimitive Recreation Area Name	Semiprimitive Recreation Area Acres
Stony Mountain	30,662	Dome Shaped	32,544
Sapphire	27,546	Kent Peak	27,546
Allan Mountain	72,472	Overwhich-Warm Springs	79,627
Blue Joint	19,310	Chicken-Deer & Nez Perce	21,321
Selway-Bitterroot	48,154	Sweeney-Carlton, Brooks, Sweathouse-Sharrott, Fred Burr, Tamarack, Canyon, Camas-Roaring Lion, Lost Horse, Rock, Trapper and 6 small unnamed areas	56,028
North Big Hole	2,956	Balsam	3,020
Sleeping Child	12,246	Sleeping Child	12,475
Lolo Creek	587	Carlton	587
Total	213,933		233,148

The Overwhich-Warm Springs, Chicken-Deer, Nez Perce, Canyon, Camas-Roaring Lion, and Lost Horse areas contain access roads. The Dome Shaped, Kent Peak, Balsam, Carlton, and Overwhich Falls areas are contiguous to roadless areas on adjacent National Forests. The management area is mostly forested but contains many rock and grassy inclusions, and is generally steep. About 50 percent of the area is capable of producing crops of industrial wood but is designated unsuitable to meet semiprimitive objectives. Recreation use is mainly hunting, fishing, hiking, and camping. There are 160 miles of fisheries streams, and parts of 7 grazing allotments in the area.

Several of the areas provide unique wildlife habitat. Parts of Sweeney-Carlton, Brooks, Camas-Roaring Lion, Dome Shaped, and Overwhich-Warm Springs recreation/security areas are big-game winter range. Nez Perce Fork contains a migration corridor and spring and fall range for an indigenous Rocky Mountain bighorn sheep herd.

The Burnt Fork municipal watershed is located mostly in this management area.

2. Goals

Emphasize motorized and nonmotorized semiprimitive recreation activities and elk security. Manage big-game winter range to maintain or enhance big-game habitat. Manage the Saddle Mountain, Nez Perce, Deer Creek, Beaver Creek, Bare Cone, Burnt Fork, Roaring Lion, Canyon Creek, and Lost Horse road corridors to provide recreation access.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Manage for recreation activities associated with roadless areas, including hiking, hunting, fishing, camping, motorbiking, and snowmobiling. Provide campground facilities in high-use areas to protect soil and water resources and maintain recreation values.

(2) The Travel Plan will identify the areas, trails and roads open for motorized vehicle use and the types of vehicles that are permitted. Motorized use will not be permitted where wildlife, adjacent wilderness, soil and water resources, or public safety are threatened.

(3) The recreation opportunity spectrum setting is semiprimitive motorized and nonmotorized (USDA, nd).

(4) Facilities and trails will be compatible with the semiprimitive setting. Some trails will be constructed or reconstructed to accommodate off-road vehicle use. Trailhead facilities will be built along existing roads. Improvements away from the road may include primitive shelters, corrals, tent frames, hitchrails, and sanitation facilities.

(5) The Lost Horse, Nezperce, Deer Creek, Burnt Fork, Roaring Lion, Canyon Creek, and Saddle Mountain roads will be managed to provide recreation access.

(6) Pending resolution by Congress, that portion of the management area within the boundary of Montana Wilderness Study Act areas will be administered according to the goals and standards established for Management Area 6.

b. **Visual Quality**

(1) The visual quality objective is retention (USDA, 1977).

c. **Wildlife and Fish**

(1) Wildlife improvements such as burning, planting native vegetation, and browse pruning will be scheduled in habitat type HT123 as long as they are compatible with the semiprimitive recreation setting.

(2) Forest management practices, including tree removal, can be prescribed to enhance big game habitat on the winter range portions of Brooks, Sweeney-Carlton, Camas-Roaring Lion, Dome Shaped, and Overwhich-Warm Springs areas. Timber practices can also be utilized to improve bighorn sheep spring range in Nez Perce.

d. **Range**

(1) All improvements are permitted as long as they are compatible with the semiprimitive setting.

(2) Allotments will be managed to protect high-use recreation areas and soil and water quality.

(3) Livestock use will be limited to 35 percent of forage on elk winter range and 50 percent on summer range.

(4) Available forage may be utilized for recreation stock if semiprimitive setting and other recreation opportunities are protected.

e. **Timber**

(1) Vegetative treatment, including tree removal, may be prescribed to meet the goals and recreation standards of this management area.

(2) Sanitation-salvage harvest may be prescribed to protect recreation use and resources within existing road corridors.

(3) Harvest activities will be compatible with the semiprimitive setting. Harvesting will be done during low-use season.

(4) The area is not suitable for timber production and any timber harvest volume will be nonchargeable.

(5) Site preparation, other than what occurs by harvest and slash disposal, will not be prescribed. Regeneration will be by natural means.

(6) Yarding will be by methods that do not require new roads.

(7) Timber harvest without additional roads may be prescribed to improve elk winter range in Brooks Creek and Nez Perce Fork and parts of Sweeney-Carlton, Camas-Roaring Lion, Dome Shaped, and Overwhich-Warm Springs areas.

f. **Minerals and Energy Resources**

(1) No surface occupancy or limited surface occupancy stipulations will be recommended for all new oil and gas leases.

(2) Oil and gas leases and operating plans will comply with standards which limit roads to protect resources, and with the Forest Travel Plan (Appendix N).

g. **Lands**

(1) New special uses should include provisions for maintenance of instream flows to maintain existing fisheries (Appendix L).

(2) Offer no semiprimitive recreation lands for exchange.

h. **Road System**

(1) No additional roads will be permitted for mineral prospecting and exploration. Additional roads may be approved when they are the next logical step in developing the mineral resource.

(2) Maintain road surface for public safety and to protect the environment.

i. **Protection**

(1) Visually sensitive areas along the Bitterroot Mountain face will be protected. Wildfire suppression strategies of control, contain, and confine will be utilized to meet the management objectives of this area and adjacent management areas. (See Appendix M). Firefighting equipment and methods which meet the goals and standards of this management area are appropriate.

(2) Periodically evaluate for unnatural insect and disease problems and problems which threaten the goals of adjacent management areas.

j. **Soil and Water**

(1) Management activities will be designed to protect the municipal watershed.

(2) Soil technical support will be provided for all management activities that involve soil disturbance, such as mining, in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Provide recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

(3) Trail improvement or construction will be implemented with emphasis on soil stability and stream protection.

k. **Corridors**

(1) This is an "avoidance" area. (See Appendix H)

4. **Schedule of Management Practices**

Management Practice	----Average Annual---- Acres	Miles
Plan Program (1986-1995)		
Wildlife habitat improvement		
Prescribed burn	8	
Other	4	
Total	12	
Trail construction and reconstruction		4.5
Projected Program (1996-2005)		
Wildlife habitat improvement		
Prescribed burn	8	
Other	4	
Total	12	
Trail construction and reconstruction		2.2

See Appendix G for the wildlife habitat improvement schedule.

5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 7, 8, 9, 10, 11, 22, 23, 26, 27, 28, 29, 30, 32, 36, 38, 40, 41, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

H. Management Area 6

1. Description

Recommended additions to the Selway-Bitterroot Wilderness are 48,305 acres consisting of the mouths of 16 canyons, the upper portions of which are currently in wilderness. Also recommended are 28,500 acres in Blue Joint Creek. This parcel is contiguous with the Frank Church-River of No Return Wilderness and is a part of the Blue Joint Wilderness Study area, Montana Wilderness Study Act, P.L. 95-150 (MWSA). It could be added to the adjoining wilderness or stand by itself as a separate wilderness.

Recommended areas have high wilderness attributes, longstanding support for wilderness, good topographic boundaries, and low effect on market outputs.

These recommendations are preliminary administrative recommendations that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and the President of the United States. Final decisions on wilderness designation have been reserved by the Congress to itself.

2. Goals

Pending action by Congress, manage to maintain the presently existing wilderness characteristics and potential for inclusion in the wilderness system.

Specific management direction will be incorporated as Forest Plan amendments upon establishment as wilderness by Congress. If added to existing wilderness, the additions will be administered in accordance with standards established for that wilderness, Management Areas 7b and 7c, as modified by wilderness legislation.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Maintain existing primitive and semiprimitive settings (USDA, nd). Manage the area essentially free from evidence of human restrictions and controls.

(2) Issue no new outfitter permits.

(3) Continue current uses which do not detract from wilderness values. Transitory uses such as chainsaws, trailbikes and snowmobiles are appropriate if permitted by the Forest's Travel Plan.

b. **Visual Quality**

(1) The visual quality objective is preservation (USDA, 1977).

c. **Wilderness**

(1) Manage visitor use at levels that maintain the presently existing wilderness quality. These are the same limitations as for the adjoining wilderness.

(a) Party size is limited to 20 persons and 20 head of stock.

(b) Unless specifically authorized, campsites will not be occupied by any party for more than 14 days.

(c) Visitor education, maps, and brochures will be used to inform the public of use problems, minimum impact camping techniques, and conditions of occupancy and use.

d. Range

(1) Monitor range forage condition, utilization and production to provide information for the management of cattle, packstock, recreation stock, and wildlife use.

(2) Maintain no more than current stocking on range allotments.

(3) No new structural improvements will be installed.

e. **Timber**

(1) Timber harvest is not permitted. The management area has been identified as not suitable for timber production.

f. **Minerals and Energy Resources**

(1) Mineral activity will continue under the 1872 mining law. Proposed activities will comply with reasonable conditions for resource protection in accordance with the general purpose of maintaining the presently existing wilderness character.

(a) Standards for all portions with established rights prior to November 1, 1977, including Montana Wilderness Study Act (MWSA) areas, are as follows:

- No additional roads permitted for mineral prospecting and exploration. Roads may be permitted on valid claims where construction is justified on the basis of mineral showings or data, and where it is the next logical step in the development of the mineral resource.

- Upon completion of mining activity, sites including roads will be rehabilitated to approximate the original ground contour and vegetation.

(b) Standards for Montana Wilderness Study Act areas with rights established after November 1, 1977, are as follows:

- Area shall be administered so as to maintain the presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System (P.L. 95-150).

- Claims located prior to November 1, 1977 will be examined to determine whether valid private rights have been established.

- Road construction is not permitted for claims located after November 1, 1977 or where valid rights prior to this date cannot be established.

(2) Application for lease approval will not be recommended (Appendix N).

g. Lands

(1) These lands will not be offered for exchange.

h. Trail System

(1) The current system may be reconstructed or maintained, using mechanized equipment if necessary.

i. Protection

(1) Fire management.

(a) Prescriptions will be compatible with the goal of perpetuating natural ecosystems but will consider management goals for adjoining management areas.

(b) Wildfires or portions of wildfires will be suppressed to protect human life and property.

(c) Fires will be contained within the management area unless direction is compatible in adjoining areas.

(d) Fire control methods which least alter the landscape or disturb the land surface will be used.

(e) Wildfires will be controlled, contained or confined according to criteria in Appendix M.

(2) **Insects and disease**

(a) Periodically evaluate for significant insect and disease problems.

(b) Restrict insect and disease control work to that necessary to prevent an unnatural loss within the adjoining wilderness or to minimize the potential of significant loss in other management areas.

j. **Corridors**

(1) Wilderness is an "exclusion" area for utility corridors. (See Appendix H)

4. **Schedule of Management Practices**

Management Practice	Average Annual Miles
Plan Program (1986-1995)	
Trail construction and reconstruction	1.0
Projected Program (1996-2005)	
Trail construction and reconstruction	0.0

5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 8, 9, 10, 22, 23, 26, 27, 30, 32, 36, 38, 39, 40, 41, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

I. Management Area 7a

1. Description

The 158,000-acre **Anaconda-Pintler Wilderness** is managed by three National Forests. The Bitterroot Forest manages about 41,000 acres (26%), The Deerlodge Forest 43,000 acres (28%) and the Beaverhead Forest 73,400 (46%) of the area.

2. Goals

Manage in accordance with the Wilderness Act of 1964, to ensure an enduring system of high quality wilderness. Provide for primitive recreation experiences.

3. Standards

Standards were jointly prepared by the Beaverhead, Bitterroot and Deerlodge Forests for common, integrated administration of the wilderness. The Forest-wide standards in Chapter II of this plan apply to the management area. Detailed action-oriented management direction is identified in Appendix K and is available upon request. Direction contained therein is in compliance with the standards in this section.

a. Recreation

(1) Maintain existing primitive and semiprimitive nonmotorized settings (USDA, nd). Manage the area essentially free from evidence of human restrictions and controls. Mechanized use is not permitted in wilderness except as provided in the Wilderness Act.

(2) The primary means of visitor management will be education. Education will be oriented toward wildland ethics. Emphasis will be on contacting users prior to entering wilderness, at portals and within the wilderness. An education action program will be developed and updated annually.

b. Visual Quality

(1) The visual quality objective is preservation (USDA, 1977).

c. **Wilderness**

(1) Representatives from each Forest with management responsibility for the Anaconda-Pintler wilderness will recommend indicators, standards and processes for limiting change to acceptable levels using the "limits of acceptable change" process. Forest Supervisors will implement the "limits of acceptable change". Until standards are established the following restrictions apply.

(a) Party size will be limited to 15 persons and 20 head of stock.

(b) No campsite will be occupied by a party for more than 14 days unless authorized.

(c) No camping or livestock use will be permitted within 100 feet of Johnson Lake.

(d) Visitor education, maps, and brochures will be used to inform the public of use problems, minimum impact camping techniques, conditions of occupancy and use, and wilderness philosophy.

(2) Locate and post wilderness boundaries at access portals and other key points.

d. **Range**

(1) Monitor range forage condition, utilization and production to provide management information for packstock, recreation stock, and wildlife use.

(2) Nonstructural improvements shall be compatible with wilderness objectives. No new structural improvements will be installed.

e. **Minerals and Energy Resources**

(1) The area is withdrawn from mineral entry and leasing subject to valid existing rights established prior to January 1, 1984. Claims located prior to this date will be examined to determine whether prior rights have been established. If so determined, mining activities shall comply with reasonable conditions designed to maintain the wilderness resource for future use and enjoyment of its wilderness characteristics.

f. **Lands**

(1) Acquire private lands as they become available.

(2) All new special use permits shall comply with wilderness goals and legal requirements.

g. **Trail System**

(1) Design, locate, construct, reconstruct, and maintain trails in accordance with wilderness trail standards. Trails will normally be built and maintained with nonmotorized equipment.

(2) Road construction to manage surface resources is prohibited.

(3) Wilderness travelers will usually be guided by maps and publications rather than signs.

h. **Protection**

(1) Fire Management

(a) Fire management prescriptions, including planned ignition, will be compatible with the goal of perpetuating or restoring the natural diversity of plant and animal communities (Appendix M). Coordinate prescriptions with those for the adjoining roadless areas.

(b) Utilize suppression or containment strategies that consider reasonable cost, while emphasizing a high regard for human safety, protection of private property and preservation of wilderness values.

(c) Fires will be contained within wilderness unless fire management standards for adjoining management areas are compatible.

(2) Forest disease and insect outbreaks will not be controlled except where there is a clear and imminent danger to timber or other values outside the wilderness, and then only by approval of the Chief of the Forest Service.

(3) Manage the airshed to meet Class I air quality standards. Where manageable and negotiable, identify and mitigate outside influences.

i. **Corridors**

(1) Wilderness is an "exclusion" area for utility corridors. (See Appendix H)

4. **Schedule of Management Practices**

Management Practice	Average Annual Miles
Plan Program (1986-1995)	
Trail construction and reconstruction	0.6
Projected Program (1996-2005)	
Trail construction and reconstruction	0.6

5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 8, 9, 10, 23, 26, 27, 32, 36, 38, 39, 40, 41, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

J. Management Area 7b

1. Description

The 2,364,000-acre **Frank Church-River of No Return Wilderness** is the largest in the Continental United States. It is managed by six National Forests. The Bitterroot Forest manages about 194,000 acres, or 8 percent of the area. The wilderness is adjacent to and separated from the 1,340,000-acre Selway-Bitterroot Wilderness by the Nez Perce Trail Road Corridor.

Included within is the headwaters of the Selway Wild River, a segment of the Middle Fork Clearwater Wild and Scenic River, and a segment of the Salmon Wild River. The Selway River Corridor is about 16 miles long, one-half mile in width and 5,400 acres. This portion of the Selway is managed entirely by the Bitterroot Forest.

The Salmon River Corridor is about 18 miles long, a quarter-mile in width and 3,000 acres. The North Fork District of the Salmon Forest has the administrative responsibility for the Bitterroot Forest portion of the Salmon River. Management of the Salmon River is shared by the Bitterroot, Nez Perce, Payette, and Salmon Forests.

2. Goals

Manage in accordance with the Wilderness Act of 1964 and the Wild and Scenic Rivers Act of 1968, to ensure an enduring system of high quality wilderness. For the Selway Wild River Corridor, the most restrictive provisions of either Act apply. The Salmon Wild River Corridor will be managed according to provisions in the Wild and Scenic Rivers Act. Provide for primitive recreation experiences. The float program on the Salmon River is administered by the Salmon National Forest.

Standards were jointly prepared by affected Forests in Regions 1 and 4 for common integrated administration of the wilderness.

3. Standards

The Forest-wide standards in Chapter II of this plan apply to the management area. Detailed action-oriented management direction is listed in Appendix K and is available upon request. Direction contained therein is in compliance with standards contained in this section.

a. Recreation

(1) Maintain existing primitive and semiprimitive nonmotorized settings (USDA, nd). Manage the area essentially free from evidence of human restrictions and controls. Mechanized use is not permitted except as provided in the Wilderness Act or in the case of the Salmon Wild River Corridor, as provided in the Wild and Scenic Rivers Act.

(2) The primary means of visitor management will be education. Education will be oriented toward wildland ethics. Emphasis will be on contacting users prior to entering wilderness and at portals. An education action program will be developed annually.

b. **Visual Quality**

(1) The visual quality objective is preservation (USDA, 1977).

c. **Wilderness**

(1) Representatives from each Forest with management responsibility for the Wilderness will recommend indicators, standards and processes for limiting change to acceptable levels using the "limits of acceptable change" process. Forest Supervisors will implement the "limits of acceptable change" by 1990. Until standards are established the following restrictions apply.

(a) Party size will be limited to 20 persons and 20 head of stock.

(b) No campsite will be occupied by a party for more than 14 days unless authorized.

(c) Visitor education, maps, and brochures will be used to inform the public of use problems, minimum impact camping techniques, conditions of occupancy and use, and wilderness philosophy.

(2) Locate and post wilderness boundaries at access portals and other key points.

d. **Range**

(1) Monitor range forage condition, utilization and production to provide management information for packstock, recreation stock, and wildlife use.

(2) Nonstructural improvements shall be compatible with wilderness objectives. No new structural improvements will be installed.

e. **Minerals and Energy Resources**

(1) The area is withdrawn from mineral entry and leasing subject to valid existing rights established prior to October 2, 1968 for the Selway Wild River Corridor, July 23, 1980 for the Salmon Wild River Corridor and January 1, 1984 elsewhere.

Claims located prior to these dates will be examined to determine whether prior rights have been established.

If so determined, mining activities shall comply with reasonable conditions designed to maintain the wilderness resource for future use and enjoyment of its wilderness characteristics.

f. **Lands**

(1) Acquire private lands as they become available.

(2) All new special use permits shall comply with wilderness goals and legal requirements.

g. **Trail System**

(1) Design, locate, construct, reconstruct, and maintain trails in accordance with wilderness trail standards. Trails will normally be built and maintained with nonmotorized equipment.

(2) Road construction to manage surface resources is prohibited.

(3) Wilderness travelers will usually be guided by maps and publications rather than signs.

h. **Protection**

(1) Fire Management

(a) Fire management prescriptions, including planned ignition, will be compatible with the goal of perpetuating or restoring the natural diversity of plant and animal communities (Appendix M). Coordinate prescriptions with those for the adjoining Selway-Bitterroot Wilderness.

(b) Utilize suppression or containment strategies that consider reasonable cost, while emphasizing a high regard for human safety, protection of private property and preservation of wilderness values.

(c) Fire will be contained within wilderness unless fire management standards for adjoining management areas are compatible.

(2) Restrict insect and disease control work to that which is necessary to prevent an unnatural loss of the wilderness resource or protect resources outside the wilderness from an immediate threat.

(3) Integrated pest management strategies and techniques will be utilized to suppress or eradicate introduced undesirable insects and diseases to protect the wilderness and/or resources outside the wilderness commensurate with ecological, environmental and economic values.

i. **Corridors**

(1) Wilderness areas are "exclusion" areas for utility corridors. (See Appendix H)

4. **Schedule of Management Practices**

Management Practice	Average Annual Miles
Plan Program (1986-1995)	
Trail construction and reconstruction	2.6
Projected Program (1996-2005)	
Trail construction and reconstruction	2.6

5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 8, 9, 10, 23, 26, 27, 32, 36, 38, 39, 40, 41, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

K. Management Area 7c

1. Description

The 1,340,000 acre **Selway-Bitterroot Wilderness** is managed by four National Forests. The Bitterroot Forest manages about 508,000 acres, or 38 percent of the area. Included within is a portion of the Selway Wild River segment of the Middle Fork Clearwater Wild and Scenic River. The river corridor is about 10 miles long (remaining 39 miles on Nez Perce National Forest), one-half mile in width and encompasses about 2,600 acres. It is a premier, white water river for floaters. The wilderness is adjacent to and separated from the Frank Church-River of No Return Wilderness by the Nez Perce Trail road corridor.

2. Goals

Manage in accordance with the Wilderness Act of 1964 and the Wild and Scenic Rivers Act of 1968, to ensure an enduring system of high quality wilderness. The most restrictive provisions of either Act apply to the Selway River corridor. Provide for primitive recreation experiences.

3. Standards

Standards were jointly prepared by the Bitterroot, Lolo and Nez Perce National Forests for common integrated administration of the wilderness. The Forest-wide standards in Chapter II of this plan apply to this management area. Detailed action-orientated management direction is listed in Appendix K and is available upon request. Direction contained therein is in compliance with standards contained in this section.

a. Recreation

(1) Maintain existing primitive and semiprimitive nonmotorized settings (USDA, nd). Manage the area essentially free from evidence of human restrictions and controls. Mechanized use is not permitted, except as provided in the Wilderness Act.

(2) The primary means of visitor management will be education. Education will be oriented toward wildland ethics. Emphasis will be on contacting users prior to entering wilderness and at portals. An education action program will be developed annually.

(3) White Water Floating

(a) All parties floating the Selway National Wild River will be required to comply with specific conditions of use under the authority of the Secretary of Agriculture (36 CFR 251.25 and 36 CFR 261.11 m).

(b) Launch dates for noncommercial permits will be allocated on the basis of a computerized lottery.

(c) During the floating period of May 15 through July 31, only one launch per day will be permitted.

(d) All parties will be allowed to launch only on scheduled days.

(e) There will be a maximum of four commercial outfitters on the Selway River each year.

(f) Educational groups will not receive special allotments.

(g) Search and Rescue operations will be the responsibility of the party involved.

b. **Visual Quality**

(1) The visual quality objective is preservation (USDA, 1977).

c. **Wilderness**

(1) Representatives from each Forest with management responsibility for the wilderness will recommend indicators, standards and processes for limiting change to acceptable levels using the "limits of acceptable change" process. Forest Supervisors will implement the "limits of acceptable change" by 1990. Until standards are established the following restrictions apply.

(a) Party size will be limited to 20 persons and 20 head of stock, except that float parties are limited to 16 persons.

(b) No campsite will be occupied by a party for more than 14 days unless authorized.

(c) Visitor education, maps, and brochures will be used to inform the public of use problems, minimum impact camping techniques, conditions of occupancy and use, and wilderness philosophy.

(2) Locate and post wilderness boundaries at access portals and other key points.

d. **Range**

(1) Monitor range forage condition, utilization and production to provide management information for packstock, recreation stock, and wildlife use.

(2) Nonstructural improvements shall be compatible with wilderness objectives. No new structural improvements will be installed.

e. **Minerals and Energy Resources**

(1) The area is withdrawn from mineral entry and leasing subject to valid existing rights established prior to October 2, 1968 in the Wild River Corridor and January 1, 1984 elsewhere. Claims located prior to this date will be examined to determine whether prior rights have been established. If so determined, mining activities shall comply with reasonable conditions designed to maintain the wilderness resource for future use and enjoyment of its wilderness characteristics.

f. **Lands**

(1) Acquire private lands as they become available and for the Wild River Corridor, negotiate scenic easements if purchase is not realistic.

(2) All new special use permits shall comply with wilderness goals and legal requirements.

g. **Trail System**

(1) Design, locate, construct, reconstruct, and maintain trails in accordance with wilderness trail standards. Trails will normally be built and maintained with nonmotorized equipment.

(2) Road construction to manage surface resources is prohibited.

(3) Wilderness travelers will usually be guided by maps and publications rather than signs.

h. **Protection**

(1) Fire Management

(a) Fire management prescriptions, including planned ignition, will be compatible with the goal of perpetuating or restoring the natural diversity of plant and animal communities (Appendix M). Coordinate prescriptions with those for the adjoining Frank Church-River of No Return Wilderness.

(b) Utilize suppression or containment strategies that consider reasonable cost, while emphasizing a high regard for human safety, protection of private property and preservation of wilderness values.

(c) Fires will be contained within wilderness unless fire management standards for adjoining management areas are compatible.

(d) Fire management direction for the wilderness on Darby and Stevensville Ranger Districts follows:

- Develop a wilderness fire management action plan which recognizes irrigation water, fire behavior and air quality concerns.

- Pending the completion of a wilderness fire management action plan continue to take appropriate wildfire suppression action of control, containment, or confinement.

(2) Insects and disease will be allowed to play their natural role unless they are creating a serious threat to adjacent nonwilderness resources.

(3) Manage the airshed to meet Class I air quality standards. Where manageable and negotiable, identify and mitigate outside influences.

i. **Corridors**

(1) Wilderness is classified as an "exclusion" area for utility corridors. (See Appendix H)

Management Area 7c
508,217 acres

4. Schedule of Management Practices

Management Practice	Average Annual Miles
Plan Program (1986-1995)	
Trail construction and reconstruction	7.3
Projected Program (1996-2005)	
Trail construction and reconstruction	7.0

5. Monitoring and Evaluation Requirements

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 8, 9, 10, 23, 26, 27, 32, 36, 38, 39, 40, 41, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

L. Management Area 8a

1. Description

Management Area 8a consists of scattered but mapable units of rockland, grassland, meadows, and forested upper subalpine habitat types including subalpine fir/woodrush, beargrass, and grouse wortleberry. The forested portions provide summer elk security and old growth; and the rockland, grass, and meadows provide habitat diversity. These units are generally located along major ridges and are generally above 7,000 feet in elevation. They are mainly adjacent to Management areas 1 and 5. About half of these units contain suitable range and are in grazing allotments. Recreation use includes hunting and hiking. Most of the area is background viewing or is not seen from major travel corridors.

2. Goals

Manage at the minimum level for elk security, old growth, and habitat diversity; but protect timber, soil, water, recreation, range and wildlife resources on adjacent management areas. Maintain existing uses and facilities.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. **Recreation**

(1) Manage for ROS setting and recreation activities associated with adjacent management areas.

(2) Maintain trails and roads that pass through these units for recreation use unless closure is required to meet other resource standards.

(3) Pending resolution by Congress, that portion of the management area within the boundary of Montana Wilderness Study Act areas will be administered according to the goals and standards established for Management Area 6.

b. **Visual Quality**

(1) The visual quality objective will be consistent with the objectives of adjacent management areas (USDA, 1977).

c. **Wildlife and Fish**

(1) Nonstructural wildlife improvements prescribed on adjacent timberland can extend into this management area to meet Forest-wide goals and allow for manageable boundaries.

(2) Maintain elk habitat effectiveness through road closures as specified in the Forest-wide standards in Chapter II (Lyon, 1983).

d. **Range**

(1) Permit livestock use and range improvements which are required to meet allotment management plans and range standards in adjacent management areas. Livestock use will be limited to 50 percent on big game summer range.

e. **Timber**

(1) Timber management will not be scheduled. Salvage timber to meet onsite soil, water, recreation and wildlife goals and standards and to protect adjacent management area values.

(2) The are is not suitable for timber production and any timber harvest volume will be nonchargeable.

f. **Minerals and Energy Resources**

(1) Oil and gas leases and operating plans will comply with standards which limit roads to protect resources, and with the Forest Travel Plan (Appendix N).

g. **Water and Soil**

(1) Utilize watershed rehabilitation projects, such as road cut or fill slope slump stabilization, to repair problems.

(2) Soil technical support will be provided for all management activities that involve soil disturbance, such as mining, in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Provide recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

h. **Road System**

(1) Roads may be built to access adjacent suitable and roadable timberland or for mineral activities where construction is justified on the basis of mineral showings or data and where it is the next logical step in the development of the mineral resource.

i. **Protection**

(1) Fire planning will be designed to protect adjacent timber investments and other management area values. The types of fire suppression equipment that can be used will depend on adjacent management area objectives. See fire management direction in Appendix M.

(2) Treat fuels to minimize fire danger and insect and disease problems, and protect adjacent management area values.

(3) Periodically evaluate for insect and disease problems which threaten the goals of adjacent management areas.

j. **Corridors**

(1) This area is available for a "window" providing the management goals are met. (Appendix H)

4. **Schedule of Management Practices**

No management practices are scheduled.

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5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 3, 4, 5, 6, 7, 8, 9, 10, 18, 23, 26, 27, 28, 29, 32, 34, 36, 38, 39, 40, 41, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

M. Management Area 8b

1. Description

There are 9,499 acres of big-game winter range that are grassland and sparsely forested land not suitable for timber production. The forest lands are mostly the ponderosa pine/bunchgrass habitat types. These types occur at lower elevation sites where moisture limits regeneration and growth potential. A small portion of the area supports palatable shrubs. The area is generally moderately steep, south-facing and low elevation. Major big-game winter forage areas occur here. Cattle allotments occur on most of the area.

2. Goals

Optimize big-game forage production utilizing habitat improvement practices. Manage to ensure adequate forage for wintering big-game.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. **Recreation**

(1) Manage for ROS settings and recreation activities associated with adjacent management areas.

(2) Off-road vehicle use will be controlled during critical periods on susceptible ranges such as high-use winter or spring range.

(3) Permit interpretive sites and trails which are compatible with winter range management goals.

b. **Visual Quality**

(1) The visual quality objective will be consistent with the objectives of adjacent management areas (USDA, 1977).

c. **Wildlife and Fish**

(1) Maintain elk habitat effectiveness (Lyon, 1983) in conjunction with the contiguous winter range management area as specified in Forest-wide standards Chapter II and Management Area 2.

d. **Range**

(1) Permit livestock use and range improvements which comply with winter range goals.

(2) Livestock use will be limited to 35 percent of available forage.

e. **Timber**

(1) No timber harvest is permitted except to improve winter range forage production.

(2) The are is not suitable for timber production and any timber harvest volume will be nonchargeable.

f. **Water and Soil**

(1) Habitat improvement practices will be designed to minimize or eliminate degradation of soil and water resources.

(2) Soil technical support will be provided for all management activities that involve soil disturbance, such as mining, in areas where soils are identified as sensitive to management activities in the Forest soils inventory. Provide recommended design or protection measures as needed to maintain soil productivity and stability, and to minimize soil erosion, surface disturbance, and stream sedimentation.

g. **Minerals and Energy Resources**

(1) Mineral exploration and development will have road and site restrictions from December 1 through May 15 to avoid big game winter range conflicts (Appendix N).

h. **Lands**

(1) Public ownership of this management area will not be reduced and important winter ranges will be considered for addition to public ownership by exchange or purchase (Appendix L).

i. **Road System**

(1) Roads will not be built to access any of this area, but roads may cross the area if required: to access adjacent management areas; or for mineral activities where construction is justified on the basis of mineral showings or data, and where it is the next logical step in the development of the mineral resource.

j. **Protection**

(1) Fire planning will be designed to protect and enhance winter range habitat. Fire management prescriptions will provide for big-game winter habitat and allow fire to play a natural role where appropriate (see fire management direction, Appendix M).

(2) Activity fuel treatment will be coordinated with the objectives of projects designed to improve big-game forage production.

(3) Evaluate annually for insect and disease problems which threaten the goals of adjacent management areas.

k. **Corridors**

(1) This area is available as a "window" if the winter range habitat is protected. (Appendix H)

4. **Schedule of Management Practices**

No management practices are scheduled.

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5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 4, 5, 6, 7, 8, 9, 10, 18, 23, 26, 27, 28, 32, 34, 36, 38, 39, 40, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

N. Management Area 9

1. Description

a. Research Natural Areas

Management Area 9 contains 488 acres recommended as research natural areas. Another 11,666 acres are also recommended as research natural areas but are included in Management Areas 5, 6, 7a, and 7b for a total of 12,154 acres of research natural areas in 10 parcels. The total contains 34 targets assigned by the Regional Guide for representation of forest vegetation and aquatic ecosystems (USDA, 1983). The proposed areas and ecosystem targets are displayed in Table III-2.

Table III-2
Research Natural Area Location, Size, and Ecosystem Targets

Research Natural Area	Acres	Mgt. Area	Ecosystem 1/ (Habitat Type Code)
East Fork	480	7a	Beaver ponds and Abla/Vaca(640) 2/.
Bass Creek	2,088	6	Abgr/Clun(520), Abla/Gatr(630), Abla/Libo(660), and Abgr/Libo(590) 2/.
Bitterroot Mtn Snow Aval	1,623	5	Abla/Mefe(670) and Abla/Xete(690).
Bitterroot River	40	9	Rivers.
Boulder Creek	1,042	6,9	Psme/Vagl(280), Psme/Phma(260), Abla/Clun(620), and Type I streams.
Lower Lost Horse Canyon	1,561	5	Psme/Libo(290), Psme/Syal(310), Psme/Caru(320), and Thpl/Clun(530).
Salmon Mountain	2,267	7b	Scree, Abla/Caca(650), Abla/Luhi(830), Pial/Abla(850), Laly/Abla(860), Pial(870), Fevi, Type II streams, cold springs, low production potential lake, and lakes without fish.
Sapphire Divide	628	5	Pial(870), Pial/Abla(850), Laly/Abla(860), Abla/Luhi(830), and lakes without fish.
Sawmill Creek	245	9	Pipo/Agsp(130), Pipo/Feid(140), Psme/Agsp(210), Feid/Agsp, and Fesc/Feid.
Upper Lost Horse Canyon	2,180	5	Abla/Vasc(730) and Low production potential lake.
Kootenai Forest			Fresh marsh-deep 3/.

1/ See Table II-2 and Pfister and others (1977).
2/ Lolo NF Abgr/Libo and Beaverhead NF Abla/Vaca assignments are represented in Bitterroot NF Research Natural Areas.
3/ Fresh marsh-deep assignment has been filled by Kootenai NF

Management Area 9
488 acres

b. **National Natural Landmarks**

Areas illustrating the geological and ecological character of the Nation have been nominated as National Natural Landmarks (NNL). The nomination reports, on file in the planning records, describe and locate each proposal. Landmark purpose, management area location, and area are identified below:

Sapphire Divide	This area corresponds to the Sapphire Divide Research Natural Area which will protect the integrity of this site. The Sapphire Divide RNA is in Management Area 5 and is 628 acres.
Lost Horse Canyon Sites	This area corresponds to the Bitterroot Mountain Snow Avalanche Research Natural Area. The RNA and Management Area 5 direction will protect the integrity of this site. There are 1,623 acres in this NNL.
Sawmill Creek	This area corresponds to the Sawmill Creek Research Natural Area which is 245 acres and is in Management Area 9. The RNA direction will protect this NNL.
Lost Horse Canyon	Includes the Lost Horse and North Lost Horse drainages which are in Management Area 5 and Management Area 6 respectively. Both classifications will protect the proposed area. The area represents the Idaho batholith. This NNL overlaps with the Lost Horse Canyon Sites area.
Nelson Lake Slide	Includes the slide area that impounded Nelson Lake. The area is in existing and recommended wilderness, Management Areas 7c and 6 respectively. Both designations will protect the integrity of the site. Represents a rock slide impounding a small lake. The approximate acreage is 960.
Rock Glacier	Includes an area around Trapper Peak which is existing wilderness, Management Area 7c. Represents orbicular rocks. The acreage is undetermined.
Skalkaho Stock	The area is within Management Areas 5, 8a, 1, 3a, and 3b. Since the nomination report recommends mining to expose the geologic formation, the standards in Management Areas 1, 3a, and 8a would meet this objective. Represents tertiary alkalic intrusions. The acreage is undetermined.
Skalkaho Falls	The area is within Management Area 5 which will protect the integrity of the area. Represents Precambrian rocks belonging to the Wallace Formation and contains brecciated horizons. The acreage is undetermined.
Natural Arch	The arch is in recommended wilderness, Management Area 6. Represents a natural arch in Blue Joint Creek, a part of the Idaho batholith. The acreage is undetermined.

2. **Goals**

Manage research natural areas to provide for nonmanipulative research and observation. Maintain existing roads and trails.

Cooperate with other agencies in the identification, nomination and registration of National Natural Landmarks.

3. **Standards**

The Forest-wide management direction in Chapter II of this plan applies to this management area.

Specific management area direction will be incorporated as Forest Plan amendments upon establishment of the areas.

a. **Recreation**

(1) Discourage use in RNAs except along existing roads and trails. ORV use off existing roads and trails will not be permitted.

(2) The recreation opportunity setting is defined by the adjacent management area.

(3) Do not permit recreation improvements in RNAs, except trails, unless for research. Manage NNLs in accordance with the surrounding Management Areas.

b. **Visual Quality**

(1) The visual quality objective is the same as the surrounding Management Areas (USDA, 1977).

c. **Wilderness**

(1) The Salmon Mountain and East Fork RNAs will be managed in accordance with existing wilderness management direction.

d. **Wildlife and Fish**

(1) No habitat improvements in RNAs will be allowed unless necessary to meet research objectives.

(2) Discontinue fish stocking in the Salmon Mountain RNA if established to represent the "lake without fish" target.

e. **Range**

(1) No livestock use or range improvements are allowed in RNAs unless necessary to meet research objectives.

(2) Assure exclusion of livestock from Sawmill Creek RNA.

f. **Timber**

(1) Timber harvest is not allowed in RNAs. NNLs will be managed in accordance with the management area standards in which they occur.

g. **Minerals and Energy Resources**

(1) Evaluate mineral potential prior to addition to the research natural area system.

(2) Recommend that no surface occupancy stipulations be applied to all oil and gas leases in RNAs (Appendix N).

(3) The RNAs will be recommended for withdrawal from mineral entry under the 1872 mining law unless adequately protected by other laws and regulations.

(4) Common variety minerals will not be removed except as provided for in the Skalkaho Stock NNL nomination report.

h. **Lands**

(1) No special uses or road rights-of-way allowed.

(2) Post area boundary where necessary.

i. **Road System**

(1) No new roads except as provided for in the Skalkaho Stock NNL nomination report.

(2) Closures or restrictions may be used to resolve user conflicts, promote user safety, or protect resources.

j. **Protection**

(1) Generally, fire, insects, and disease will be allowed to play a natural role within prescriptions that provide for protection of life, property, and adjacent resources.

k. **Corridors**

(1) Research Natural Areas are utility corridor "avoidance" areas. (See Appendix H)

4. **Schedule of Management Practices**

No management practices are scheduled.

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5. **Monitoring and Evaluation Requirements**

Monitoring requirements 8, 9, 10, 23, 26, 27, 28, 32, 36, 38, 39, 40, 43, and 44 in Table IV-1 is applicable to this management area. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

O. Management Area 10

1. Description

Management Area 10 contains 461 acres of developed recreation sites on the Forest. There are 33 sites including campgrounds, boat launching facilities, picnic areas, and the Lost Trail Ski Area. All sites are removed from the land base suitable for timber production. Most developed sites are adjacent to riparian zones.

2. Goals

Provide developed recreation facilities which are not provided locally by the private sector. Maintain existing sites. Protect riparian zones from human impacts.

3. Standards

The Forest-wide management direction in Chapter II of this plan applies to this management area.

a. Recreation

(1) Plan and rehabilitate all sites so facilities, including the addition of handicapped facilities, meet development levels 2, 3, and 4. (FSH 2309.11).

Within each site, replace or repair the following facilities in the next 10 years:

Replace or repair RIM condition class "substandard", MC2, and "betterment", MC5, facilities (FSH 2309.11).

Eliminate or replace 50 percent of condition class "heavy maintenance", MC3, and "replacement", MC4, facilities (FSH 2309.11).

(2) Priorities for maintenance and rehabilitation of developed recreation sites will be based on public safety and amount of use. Services will be reduced and/or sites will be closed if adequate funding is not available.

(3) No facilities will be built in riparian zones. Existing facilities will be rehabilitated to protect riparian zones from human impact.

(4) Interpretive information about wildlife habitat should be provided around existing sites, such as Indian Trees Campground.

(5) Expand Lake Como recreation facilities in the next 10 years.

(6) Provide facilities for dispersed use near developed sites.

(7) Cooperate with the private sector to provide appropriate recreation opportunities such as Lost Trail Ski Area.

(8) Recreation special use permits which are inappropriate and not in the public interest will be terminated.

(9) Provide for expansion of the Lost Trail Ski Area.

b. **Visual Quality**

(1) The visual quality objective of developed sites, adjacent areas, and access corridors is retention (USDA, 1977).

c. **Range**

(1) Discourage grazing next to developed sites during the recreation use season.

d. **Timber**

(1) Timber harvest will not be scheduled except for removal of hazard trees or where necessary to meet the goals and standards of the management area.

(2) Schedule harvest activities on adjacent sites to be compatible with developed site use.

(3) Maintain diversity and vigor in and adjacent to developed sites.

e. **Water and Soil**

(1) The bog near the Lost Trail Ski Area parking lot should be protected to reduce short- and long-term degradation.

f. **Minerals and Energy Resources**

(1) Withdraw recreation facilities from mineral exploration and development if existing laws and regulations will not protect the sites.

(2) Recommendations to withdraw will be based on a consideration of mineral and other values.

(3) Oil and gas leases will specify no surface occupancy within 400 feet of developed recreation sites. Any proposed exploratory activity within 1/4 mile of recreation sites will be coordinated by timing and location to minimize or avoid conflicts with established recreation use (Appendix N).

g. **Lands**

(1) Retain ownership of lands adjacent to existing developed sites (Appendix L).

(2) Obtain rights-of-way along Burnt Fork Creek for access to National Forest land.

h. **Road System**

(1) Road maintenance to level 4 for access to developed sites and interior site roads.

i. **Protection**

(1) Fire planning direction will provide for protection of these areas (see Appendix M).

(2) Treat slash adjacent to developed sites in coordination with site preparation to minimize fire danger and insect and disease problems, and assure establishment and protection of new stands. Handpiling will be the primary method of slash treatment.

(3) Treatment will be compatible with the retention visual quality objective. Burned piles and charred debris in road or trail foregrounds will be minimized.

(4) Evaluate annually for insect and disease problems.

(5) Apply Forest-wide insect and disease standards to help protect developed recreation sites.

j. **Corridors**

(1) Developed recreation sites, including the Lost Trail Ski Area, are utility corridor "avoidance" sites, however, utilities will be permitted that protect the recreation and visual resource. (See Appendix H)

4. Schedule of Management Practices

Management Practice	Persons-At-One-Time	Units
Plan Program (1986-1995)		
Expansion of Lake Como facilities	100	20
Projected Program (1996-2005)		
Expansion of Lake Como facilities	125	25

5. **Monitoring and Evaluation Requirements**

Monitoring requirements 2, 8, 9, 10, 26, 27, 32, 36, 38, 39, 40, 43, and 44 in Table IV-1 is applicable to this management area. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

P. Management Area 11a

1. Description

This management area includes the narrow road corridors and a river corridor between the Selway-Bitterroot and Frank Church-River of No Return Wildernesses on the Idaho portion of the Bitterroot Forest.

The 3 road corridors and the river corridor are identified as follows:

a. Hell's Half Acre Road, a low-standard, dead-end road from Deep Creek to Hell's Half Acre Mountain.

b. The Nez Perce Trail Road separating the Selway-Bitterroot and Frank Church-River of No Return Wildernesses (Darby-Elk City Road) from Nez Perce Pass to Sabe Saddle and a short spur into Magruder Ranger Station.

c. A low-standard road in the Selway River corridor from Magruder Crossing to Paradise known as the Selway River Road.

d. A 14 mile long Recreation River segment of the Middle Fork Clearwater Wild and Recreation River Corridor that is a part of the National Wild and Scenic River System (P.L. 90-542). This segment lies between the east bank of the Selway River, and the Nez Perce Trail and Selway River Roads.

This management area contains about 4,250 acres and is bordered by classified wilderness.

2. Goals

Road corridors will be managed in accordance with the legislative history of the Central Idaho Wilderness Act of 1980 which establishes Congressional intent for management. Page 14 of S.R. 96-114 states in part: "The existing low-standard road . . . provides ample access well matched to the rugged and remote character of the wilderness on either side of the road. Maintaining the wilderness environment and atmosphere, for enjoyment by those using the road as well as by those leaving the road to enter the wilderness, must be the guiding principle in future management of the road and its immediate surroundings. Additional roadside development should be minimized to maintain the roadside wilderness character."

The river corridor that lies east of the wilderness boundaries and parallel to the Selway River along the road corridors will be managed in accordance with the road corridor management intent expressed by Congress.

3. **Standards**

The Forest-wide management direction in Chapter II of this plan applies to the management area.

a. **Recreation**

(1) Manage for semiprimitive motorized use.

(2) All development will remain at not more than Development Level II, which provides for toilets, fire rings, and tables.

(3) No new developed sites will be established.

b. **Visual Quality**

(1) Visual quality objective is retention.

c. **Wildlife and Fish**

(1) Maintain the Indian Creek hatching channel in cooperation with Idaho Fish and Game.

(2) Establish additional hatching channels if needed to fully restore anadromous fish runs.

d. **Range**

(1) Issue no grazing permits.

e. **Timber**

(1) Dead and down material may be cut but only for use within the management area for recreation, administrative or associated purposes.

(2) Trees may be removed as required for road maintenance, or to minimize hazards at developed sites or trailheads.

f. **Minerals and Energy Resources**

(1) Recommend withdrawl of the road corridor from mineral entry and no surface occupancy for mineral leases.

(2) If mining occurs, require rehabilitation to approximate natural conditions.

g. **Lands**

(1) No additional outfitter camps will be permitted.

(2) Retain land in National Forest ownership.

h. **Road System**

(1) Retain primitive characteristics of present road.

(2) Road management and signing to correct unsafe conditions are preferred over reconstruction.

(3) Brushing of roadside may be done for safety and maintenance.

i. **Protection**

(1) Insect and disease control will approximate the standards established for adjoining wilderness.

(2) Fire suppression strategy will be compatible with the adjacent wilderness fire plans.

j. **Corridors**

(1) This management area is a utility corridor "exclusion" area. (See Appendix H)

4. **Schedule of Management Practices**

No specific practices were identified.

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5. **Monitoring and Evaluation Requirements**

Monitoring requirements 1, 8, 9, 10, 23, 26, 27, 32, 36, 38, 39, 40, 43, and 44 in Table IV-1 are applicable to this management area. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

Q. Management Area 11b

1. Description

There are 4 National Recreation trails on the Bitterroot Forest:

a. The Easthouse Trail, 23 miles, is located on the Stevensville and Darby Ranger Districts and is nearly all within of the Dome Shaped Semiprimitive Recreation Area, Management Area 5.

b. The Palisade Trail, 6 miles, is located on the Stevensville Ranger District and is within the Dome Shaped Semiprimitive Recreation Area, Management Area 5.

c. The Big Hole Battlefield Trail, 3.8 miles, is on the Sula Ranger District and is within Management Areas 1, 2, 3a and 8a.

d. Lake Como Trail, 7 miles, is on the Darby Ranger District and is within Management Area 3c.

2. Goals

Within the National Forest System, National Recreation Trails are designated by the Chief of the Forest Service as provided in section 4(a) of the National Trails System Act. These trails will provide a day-use or extended trail experience for a variety of outdoor recreation opportunities reasonably accessible to population centers.

Although the primary purpose of the trails is for outdoor recreation use, such other uses as powerlines, livestock driveways, and logging-road operations, may be permitted if they will not conflict with the nature and purpose of the trail.

3. Standards

The Easthouse and Palisade Trails will protected by Management Area 5 goals and standards.

The Big Hole Battlefield and Lake Como Trails will be managed in accordance with the direction of the area they traverse except for the following standards:

a. Timber harvest within 150 feet of trail centerline will be by methods other than clearcut.

b. New roads will not be constructed across or within 150 feet of existing National Recreation Trails.

c. The visual quality objective for the trail corridor, which is 150 feet on either side of centerline, is retention.

d. These trails are utility corridor "avoidance" areas. (See Appendix H)

4. **Schedule of Management Practices**

No specific practices have been identified.

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5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 8, 9, 10, 23, 26, 27, 28, 29, 32, 36, 38, 39, 40, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

R. Management Area 11c

1. Description

There is a National Scenic Trail and a National Historic Trail on the Bitterroot Forest:

a. A segment of the Continental Divide National Scenic Trail which is within Management Area 3a.

b. Segments of the Lewis and Clark National Historic Trail which are within Management Area 3a.

c. Segments of the Nez Perce National Historic Trail.

2. Goals

Goals for the Lewis and Clark National Historic Trail are described under a plan written by the National Park Service. It will be managed in accordance with the goals and standards of major travel corridors, Management Area 3a.

The Continental Divide National Scenic Trail was established by Congress in P.L. 95-625. Portions of this trail follow existing trails and roads along the Continental Divide. Location for nonexistent portions are not yet identified. The area from Schultz Saddle to Gibbons Pass is one of these areas. Route selections will be completed now that the Continental Divide National Scenic Trail Comprehensive Plan has been approved. The integrity of the general area through which the Continental Divide Trail runs must be maintained until routes have been finalized. Emphasis will be on foot travel, provisions for horse use and in addition, continuation of motorized use where presently permitted and appropriate. Consideration should be given to the needs of the long distance traveler. The trail may be routed through a variety of resource uses and activities, and resource management adjacent to the trail will not be precluded. Location and management will be sensitive to concerns about historical, cultural and natural features, wildlife, and areas of concentrated use.

Establishment of the Nez Perce National Historic Trail, P.L. 99-445, requires the development of a comprehensive plan for management and protection of the trail by 1988. The trail will be linked with the Lewis and Clark National Historic Trail, the Continental Divide National Scenic Trail, and the Big Hole Battlefield National Recreation Trail.

3. Standards

a. Management direction for the Lewis and Clark National Historic Trail is the same as for the management area through which it passes.

b. Management direction for the Continental Divide National Scenic Trail will be incorporated as a Forest Plan amendment upon final selection of the route.

c. Management direction for the Nez Perce National Historic Trail will be incorporated as a Forest Plan amendment upon completion of the comprehensive plan.

d. These trails are utility corridor "avoidance" areas. (See Appendix H)

4. **Schedule of Management Practices**

No specific practices have been identified.

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5. **Monitoring and Evaluation Requirements**

The monitoring requirements in Table IV-1 that are applicable to this management area are: 1, 2, 4, 8, 9, 10, 23, 26, 27, 28, 32, 36, 38, 39, 40, 43, and 44. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

S. Timber Sale Program

The planned timber sale program by probable method of harvest and by management area is summarized in Table III-3.

Table III-3
Schedule of Planned Average Annual Timber Sale Program by Harvest Method 1/

Management Area	Probable Method of Harvest: Even-aged Mgmt System 2/ MMBF/Acres	Uneven-aged Mgmt System MMBF/Acres	Total MMBF/Acres
1	14.57/1528	0/0	14.57/1528
2	12.01/1439	0/0	12.01/1439
3a	3.05/283	0/0	3.05/283
3b	3.43/285	.19/100	3.62/385
3c	.12/12	0/0	.12/12

1/ - Includes non-interchangeable volume components.
2/ - Includes sanitation/salvage volume.

IV. IMPLEMENTATION

A. Introduction

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

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

B. Influence of Past Management on Future Options

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

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

Examples of Forest Plan changes from current direction are as follows:

> Old timber sale activities on portions of the Bitterroot Face exceed Forest Plan visual management direction. They will be visible for some time so new activities will be limited to allow visual recovery.
>
> Existing cutover in some drainages such as Took Creek exceed Forest Plan hydrologic recovery standards. It will take time to reach full hydrologic recovery.
>
> In some areas elk cover has been reduced further than provided for in the Forest Plan management area direction. Recovery periods to meet plan direction will reduce activity levels for a period of time.

C. Project Planning

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

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

Documents designed to give further guidance to management activities have been or will be developed under the umbrella of this Forest Plan. They include those shown in Appendix K and the following:

Forest Travel Plan
Range Allotment Management Plans
Area Transportation Plans
Fire Management Action Plan
Environmental Analysis Reports
Activity Schedules

The management direction provided by this Forest Plan comprises the sideboards within which project planning and activities take place. It defines management area goals and management standards that guide project activities toward achieving a desired future condition for the management area and, collectively, for the Forest. It specifies schedules for project activities or management practices. It provides guidance concerning potential landtype and habitat type constraints, including assumptions about the appropriate vegetative management practices for timber sale projects. On-the-ground project analysis validates the appropriateness of those assumptions.

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

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

The assignment of land to some Forest Plan management areas is based on cost and yield data that was averaged for a number of conditions such as age class of existing timber and existing road densities. Correspondence between the assumed average conditions and what is actually encountered on the ground when a timber sale is designed must be monitored. It is expected that this monitoring will identify some portion of lands that in reality should be excluded from the suitable timber base as well as some lands currently designated unsuitable that should be added to the base. The process developed to determine suitability is detailed in Forest Plan Note Number 214.

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

Public involvement will be a part of the project planning.

Environmental analyses will be performed by interdisciplinary teams. Assignment to the teams will be made by the Forest Supervisor or District Ranger based upon the type and complexity of project, the affected resources, and potential for public concern.

D. Monitoring and Evaluation

Monitoring and evaluation comprise the management control system for the Forest Plan. They will provide the decision maker and the public information on the progress and results of implementing the Forest Plan.

Monitoring and evaluation entails comparing results being achieved to those projected in the Plan. Costs, outputs, and environmental effects, both experienced and projected, will be considered.

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

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

- how well the Forest is meeting its planned goals and objectives;
- if existing and emerging public issues and management concerns are being adequately addressed;
- how closely the Forest Plan management standards are being followed;
- if outputs and services are being provided as projected;
- if the effects of implementing the Forest Plan are occurring as predicted, including significant changes in productivity of the land;
- If the dollar and manpower costs of implementing the Forest Plan are as predicted;
- if implementing the Forest Plan is affecting the land, resources, and communities adjacent to or near the Forest;
- if activities on nearby lands managed by other Federal or other government agencies, or under the jurisdiction of local governments, is affecting management of the Forest;
- if research is needed to support the management of the Forest, beyond that identified in Chapter II of the Forest Plan; and
- if there is a need to amend or revise the Forest Plan.

Monitoring requirements for this Forest Plan are outlined in Table IV-1, Forest Plan Monitoring Requirements. These requirements address the items to be monitored, data sources, expected precision and reliability, frequency of measurement, reporting period and acceptable variability. Most monitoring items apply to specific management areas as identified or each management area in Chapter III.

Other monitoring items are more applicable to broad areas or are Forest-wide in nature, and will be evaluated from such sources as the data base, Forest attainment reports, public involvement processes, and non-Forest Service sources.

Evaluation of data gathered during monitoring will be guided by the Decision Flow Diagram detailed in Figure IV-1. As indicated in the diagram, the results of this evaluation lead to decisions on further action of the following types:

- continuing the management practice;
- referring the problem to the appropriate line officer for improvement of the application of the management practice;
- modifying the management practice through a Plan amendment;
- modifying the land management prescription through a Plan amendment;
- revising the schedule of outputs;
- revising the cost per unit output; or
- initiating revision of the Plan.

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

- A quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan;
- Documentation of measured effects, including any change in productivity of the land;
- Unit costs associated with carrying out the planned activities as compared with unit costs estimated during Forest Plan development;
- Recommendations for changes;
- A list of needs for continuing evaluation of management systems and for alternative methods of management;
- A list of additional research needed to support the management of the Forest; and
- Identification of additional monitoring needs to facilitate achievement of monitoring goals.

The monitoring planned in Table IV-1 is required to evaluate the level of outputs and activities identified in Table II-1. However, output levels and monitoring requirements will be balanced to assure that Forest Plan goals, objectives, and standards are being met at the least cost. If outputs and activities are reduced, the monitoring program may also be reduced if Forest Plan goals, objectives, and standards can be met. Outputs and activities will also be reduced, when necessary, to assure that programmed monitoring will properly evaluate the effects of activities. All changes from the Forest Plan output, budget, and monitoring requirements will be considered deviations which will be guided by the decision flow diagram, Figure IV-1, and will require an evaluation report.

E. Amendment and Revision

If, during Forest Plan implementation, it is determined that the best way to achieve the prescription for a management area does not totally conform to a management prescription standard, the Forest Supervisor may amend that standard for a specific project. Such site specific amendments (CFR 219.10(f)) and the rationale for the changes must conform to NEPA requirements.

There will be no deviation from standards established for threatened and endangered species conservation and protection unless a biological evaluation concludes that such deviation would have no adverse effect on the recovery of the species and there has been consultation with the Fish and Wildlife Service.

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

Table IV-1
Monitoring and Evaluation Requirements

#	NFMA Requirement 36 CFR 219 12(K)(4a) Effects To Be Measured	Data Source	36 CFR 219 12(K)(4b) Expected Precision 1/	Expected Reliability 2/	Frequency of Measurement 3/	36 CFR 219 12(K)(4c) Reporting Period	Variability Which Would Initiate Further Evaluation
36 CFR 219.12(K)(1) - Quantitative estimate of performance comparing outputs and services with those projected by the Plan. Monitoring will include the following:							
1	Compare actual to projected use and capacity by Recreation Opportunity Spectrum (ROS)	Recreation Information Management system (RIM)	Low	Low	100% annually	5 years	±20% by ROS category
2	Condition of developed sites	RIM Information system	High	High	100% annually	5 years	Failure to eliminate replace or repair 50 % of MC2 & 5, & 25% of 3 & 4 facilities
3	Unroaded area	Roadless inventory	High	High	Annually	5 years	Change in roadless base different than projected in App C Environmental Impact Statement (EIS)
4	Visual quality	ID team review of altered landscapes	Low	Moderate	1 project per District per year	Annually	Failure to meet visual quality objective
5	Diversity	ID team review of altered habitats	Low	Moderate	1 project per District annually	Annually	Failure to meet wildlife objectives
6	Acres of old growth by habitat type, land class, and management area	Timber Stand Management Record System (TSMRS)	High	High	100% every 3 years	5 years	±20% over 3 years
7	Elk habitat effectiveness	Travel plan, TSMRS	Moderate	High	Annually	Annually	Any deviation from Forest-wide objectives
8	Hunter trends and season	MTDFWP hunter survey	High	Moderate	Annually	Annually	Any change in season length, ±10% change in hunting population
9	Bull elk harvest in first week of season	MTDFWP hunter survey	High	Moderate	Annually	Annually	≥ 40% of bull elk harvest in first week of season in each hunting district
10	Leafy spurge, dalmation toadflax, goatweed and knapweed	Inventory of infestations	Moderate	Low	100% every 3 years	Every 3 years	Increase in area infestation
11	Volume and area offered, sold, and harvested by mgt area	TMIS	High	High	100% annually	Annually	±20 percent annually or ±10 percent over a 5-year period
12	Lodgepole and ponderosa pine volume offered	Timber TSMRS	High	High	100% annually	Annually	±25 percent over a 5-year period
13	Volume offered by logging system	Timber Sale Reports	High	Moderate	100%	Every 3 years	Logging system, ±20%
14	Silvicultural prescriptions	ID team review, pre and post sale	Moderate	High	1 sale per District/yr	Annually	Depart from mgt practice

Table IV-1 (continued)
Monitoring and Evaluation Requirements

#	NFMA Requirement Effects To Be Measured	Data Source	Expected Precision 1/	Expected Reliability 2/	Frequency of Measurement 3/	Reporting Period	Variability which Would Initiate Further Evaluation
15	Timber mortality	Timber inventory	High	Moderate	5 years	5 years	±20 percent over 5-year period
16	Timber yields/ acre	Growth study plots, timber inventory	High	High	5 years	5 years	±5 percent over 5-year period
17	Water and sediment yields (validate sediment model and water yield) (compliance with State and Federal water quality standards, BMP's)	Flow and sediment sampling before and after project activities	Moderate	Low to Moderate	6 streams representing major geologic types	Annually	20% variation from predicted sediment increases and changes in water quantity
18	Hydrologic recovery in sensitive drainages by land class and habitat type	ID team project review	Moderate	Moderate	1 project per District per year	Annually	Deviation from soil and water objectives
19	Cumulative off-site watershed effects	Equivalent road area evaluation of watersheds with recent activities, Use R-5 or similar method, landtype inventory, existing & planned roads & cutover areas	High	Moderate	One timber sale/District/ year that involves additional road construction	Annually	Exceeding geomorphic threshold of concern
20	Peak flow and Low flow effects	Flow sampling before & after projects	Moderate	Moderate	Ice-free, Apr-Oct, annually	Annually	10% variation
21	Validation of aquatic habitat quality and fish population assumptions used to predict effects of activities	Evaluate aquatic insect density/diversity, fish populations intergravel sediment, channel structure and streambank vegetation changes	High	Moderate	6 streams representing major geologic types	Annually	A decline in aquatic habitat and/or fish population for more than 1 year
22	Riparian area condition	ID team review of altered riparian areas	Low	Moderate	1 project per District per year	Annually	Deviation from riparian area and fisheries objectives
23	Mineral activities	Compare activities with Plan of Operation, Notice of Intent, & operating plan for oil and gas	Low	Moderate	100% of current activity annually	Annually	Adverse effect upon surface resources or departure from condition of the approved plan
24	Road construction, mitigation and maintenance standards including BMP's	Road construction and timber sale contracts and post sale ID team review	High	Moderate	One sale per District per Year	Annually	Deviation from standards
25	Harvest of moderate to high risk mountain pine beetle stands	TSMRS and timber sale review	High	Moderate	100% annually	Annually	Less than 50% of LP offered from high and moderate risk stands

Table IV-1 (continued)
Monitoring and Evaluation Requirements

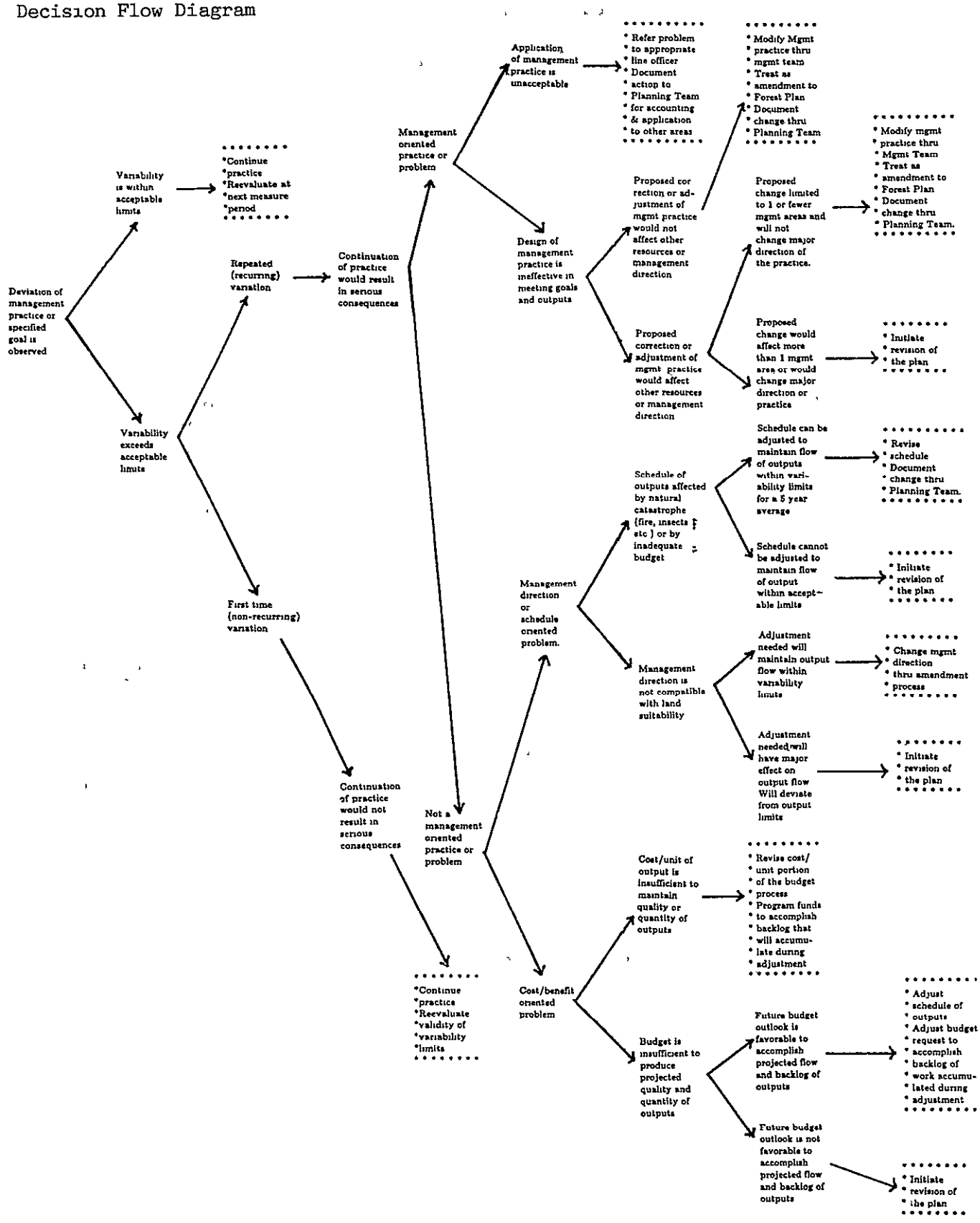
#	NFMA Requirement Effects To Be Measured	Data Source	Expected Precision 1/	Expected Reliability 2/	Frequency of Measurement 3/	Reporting Period	Variability Which Would Initiate Further Evaluation
26	Benefit values for outputs	Contracts, RPA reports, receipts	High	Moderate	Annually	Annually	±10% projected values
27	Emerging issues and changing social values toward Forest activities	Letters, meetings and other public comments	High	Moderate	100% annual	Annual	Any change in the major planning issues
36 CFR 219 12(K)(2) - Document those prescriptions and effects, including any significant changes in productivity on the land that are measured. Monitoring will include the following:							
28	ORV effects on land	Site inspection and ID Team review	Moderate	Moderate	25% of high use areas and trails annually	Annually	Irreversible ecosystem damage, user conflicts, displacement of wildlife, and public safety
29	Recreation site and trail use effects on land	Site & trail inspection and interdisciplinary (ID) team review	Moderate	Moderate	25% of high use areas and trails annually	Annually	Irreversible ecosystem damage
30	Livestock effects on land	Technical review of condition and trends, forage production, and transitory range	Moderate	Moderate	10% of allotments annually	Annually	±10% change in the carrying capacity
31	Timber sale effects including soil compaction, displacement, and puddling, and severe burns	Soil inventory and site inspection prior to and after activity on susceptible soils - Measured transects	Moderate	Moderate	25% of projects per year	Annually	More than 20% of the activity area detrimentally affected (total accumulation of detrimental compaction, displacement, puddling and/or severely burned)
36 CFR 219 12(K)(3)							
32	Document costs associated with carrying out the planned management prescriptions as compared with estimated costs in the Plan	Project report contracts PAMARS	High	High	Annually	Annually	±10% projected costs
36 CFR 219.12(K)(5a)							
33	Lands adequately restocked	Survival exams and TSMRS	High	High	100% annually	5 years	±5 percent over 5-year period
36 CFR 219.12(K)(5b)							
34	Examine unsuitable timberlands for suitability	Stand exams, land typing and timber sale reports	Moderate	Moderate	Ongoing	5 years	±5 percent over 5 year period
36 CFR 219.12(K)(5c)							
35	Evaluate maximum size limit for harvest areas	TSMRS	High	High	100% annually	Annually	Any deviation from regulations

Table IV-1 (continued)
Monitoring and Evaluation Requirements

#	NFMA Requirement Effects To Be Measured	Data Source	Expected Precision 1/	Expected Reliability 2/	Frequency of Measurement 3/	Reporting Period	Variability Which Would Initiate Further Evaluation
36 CFR 219.12(K)(5d)							
36	Mountain pine beetle infestation	FPM aerial observation by RO Entomologists	Moderate	Moderate	100% annually	Annually	Epidemic conditions approaching the suitable timber base
37	Insect and disease organism status as a result of activities	FPM aerial observation by RO Entomologists	Moderate	Moderate	100%	Annually	Epidemic conditions following management activities
36 CFR 219.19(6)							
38	Elk population in relation to habitat changes	Montana Dept Fish, Wildlife & Parks(MTDFWP)	High	Moderate	100% annually	Annually	±5% of most recent 3-year average
39	Pine marten population in relation to habitat changes	Census	Low	Low	3 transects annually	Annually after 5-yr average is established	±5% of most recent 5-year average
40	Pileated woodpecker population in relation to habitat changes	Census	Low	Low	3 transects annually	Annually after 5-yr average is established	±5% of most recent 5-year average
41	Cutthroat trout population in relation to habitat changes	Stream inventory and census	Moderate	Moderate	6 transects annually	Annually after 5 yr	10% from projected yield
36 CFR 219.7(f)							
42	Effects of National Forest management on adjacent land and communities	ID team review of management activities	Moderate	High	Annually	Annually	Eliminating effect would change National Forest outputs by 5% or change access
43	Effects of other Government agencies activities on the National Forest	ID team review of other agency activities	Moderate	Moderate	Annually	Annually	Effects cause a ±5% change in National Forest outputs or services
36 CFR 219.28							
44	Research Needs	ID and management team review of management activities	High	High	2 years	2 years	Inability to accomplish Plan goals and objectives with existing research

1/ Expected precision is the exactness of accuracy with which the data will be collected
2/ Expected reliability to the degree of monitoring accurately reflects the total Forest situation.
3/ Frequency of measurement is the schedule of sampling frequency
HT Habitat Type
LC Land Class
MA Management Area

Figure IV-1
Decision Flow Diagram



V. ANALYSIS OF THE MANAGEMENT SITUATION SUMMARY

This chapter summarizes supply and demand conditions for significant market and nonmarket goods and services from the planning area.

A. Supply Conditions

The analysis of the management situation determined resource supply potentials by establishing minimum and maximum production levels called benchmarks. A level was also established from which the costs and effects of applying regulation and policy constraints were measured. Production capabilities were determined for single resources and for a set of multiple resource outputs that maximized present net value. This analysis established the benchmark levels required by NFMA regulation 36 CFR 219.12e.

All benchmarks were designed to meet the minimum management requirements (MMR) in 36 CFR 219.27. The MMRs: (1) protect soil productivity and water quality by controlling timber harvest and intensity, logging system, road density, fuel treatment, site preparation methods, and watershed condition; (2) minimize hazards from flood, wind, wildfire, erosion, or other physical forces; (3) reduce hazards from pest organisms; (4) protect riparian zones by specifying silvicultural system, unit size, and road design; (5) maintain diversity; (6) provide for adequate fish and wildlife habitat to maintain viable populations; (7) assure consistency with multiple-use laws; (8) protect threatened and endangered species habitat; (9) provide for utility and transportation rights-of-way and corridors; (10) maintain road construction standards; (11) provide for temporary road revegetation; (12) maintain air quality; (13) assure reforestation; and (14) assure a 40-acre opening or clearcut limit.

A brief description of the benchmarks follows.

1. Maximize Present Net Value (Benchmark K)

This benchmark established the mix of resource uses and schedule of outputs and costs that maximized present net value using market and nonmarket assigned values. Timber harvest flow was nondeclining. The resource outputs, scheduling, benefits, and costs were used as reference points for all benchmark and alternative comparisons. Prices and trends are based on 1980 RPA values.

2. Maximize Timber (Benchmark W)

The maximum legal capability of the Forest to produce timber was determined by this benchmark (Table V-1). Timber production was maximized in decade 1 based on nondeclining flow. This benchmark was used to develop and test the range of timber outputs in alternatives.

3. Maximize Elk Habitat Potential (Benchmark U)

This benchmark established the potential for elk based on the availability of forage on winter range (Table V-1). It was not used to develop alternatives since the major elk issue is providing hunting opportunities which involves cover/forage relationships and security areas, not just forage.

4. Maximize Livestock Potential (Benchmark T)

Livestock forage production was maximized to determine the potential on suitable rangeland (Table V-1). This benchmark was used to test the range of alternative livestock outputs, and the feasibility of meeting RPA targets for livestock.

5. Maximum Wilderness (Benchmark L)

Wilderness designation was maximized (Table V-1) to determine the foregone monetary values and resource outputs by comparison with Benchmark K. This benchmark was used to develop a wide range of roadless area recommended for wilderness. Timber flow was nondeclining.

6. Minimum Level (Benchmark M)

This benchmark defined the minimum costs of public landownership and the resource outputs which are incidental to Forest management. It was a reference point for estimating alternative activities, outputs, and costs which result from Forest Service activities.

7. Current Direction (Benchmark X)

Benchmark X defined the current and expected future level of outputs if current management direction continued. This benchmark followed existing unit plan management area direction with no budget constraint. It was the basis for the current program or no action alternative which has current budget restrictions.

Table V-1
Maximum Potential Resource Supply and Current Program Supply
(average annual outputs for decades 1-5)

Resource	Unit of Measure	Decade 1	2	3	4	5
Timber	MMCF					
Benchmark W		18	18	18	18	18
Current Program		7	7	7	11	11
Elk	M Elk					
Benchmark U		6.7	7.7	7.9	7.6	8.5
Current Program		5.6	5.9	5.8	5.8	6.0
Livestock	M Aum's					
Benchmark T		14.3	17.6	20.9	20.7	23.1
Current Program		11.3	11.8	13.1	14.6	17.0
Wilderness	M Acres					
Benchmark L		1143.2				
Current Program		793.3				

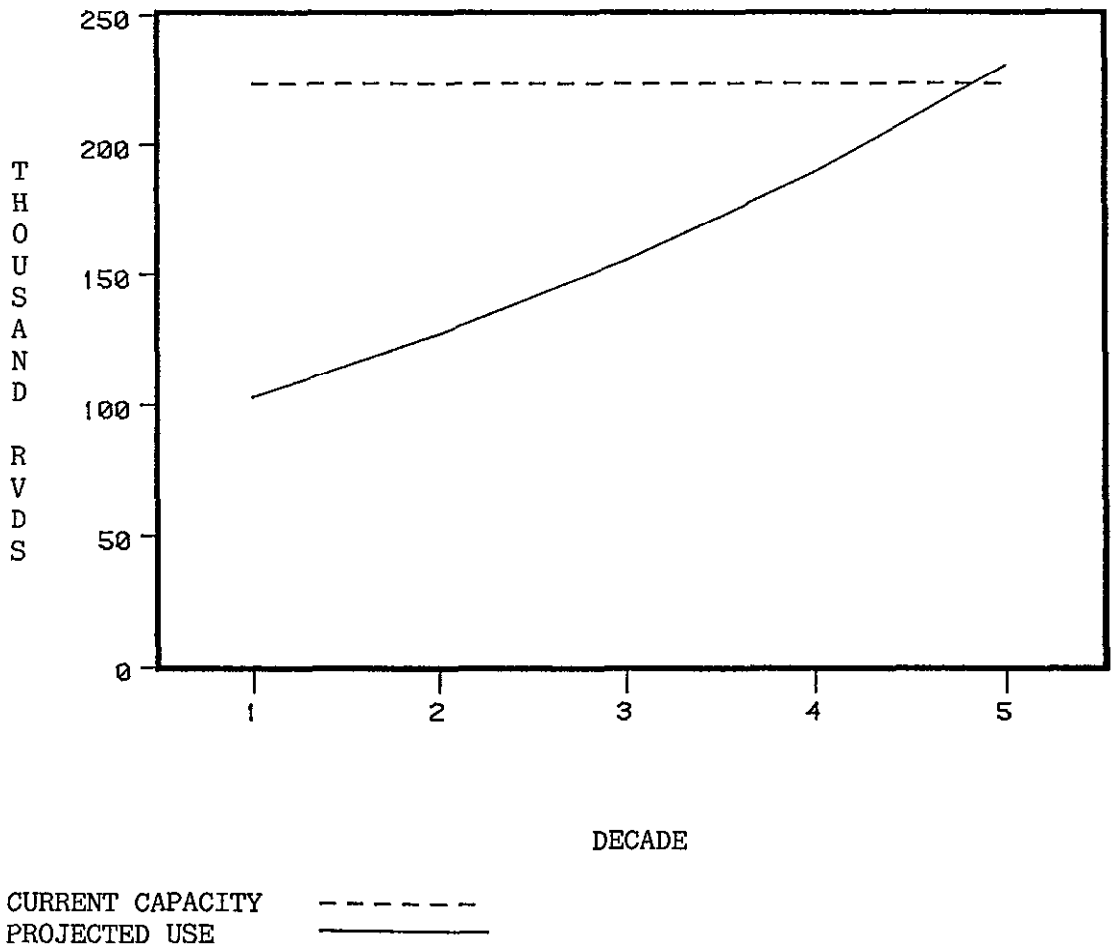
B. Demand, Capacity, Potential and Opportunities

Analysis of the benchmarks established upper and lower production potentials for selected resources. Additional analysis was done to estimate projected use levels or demand, and development opportunities.

1. Developed Recreation

Developed recreation sites, including campgrounds, boating sites, picnic sites, and a ski area are adequate to meet projected use for the next 50 years (Figure V-1) except for Lake Como picnic and campground facilities. The expansion at Lake Como would increase capacity and quality of experience.

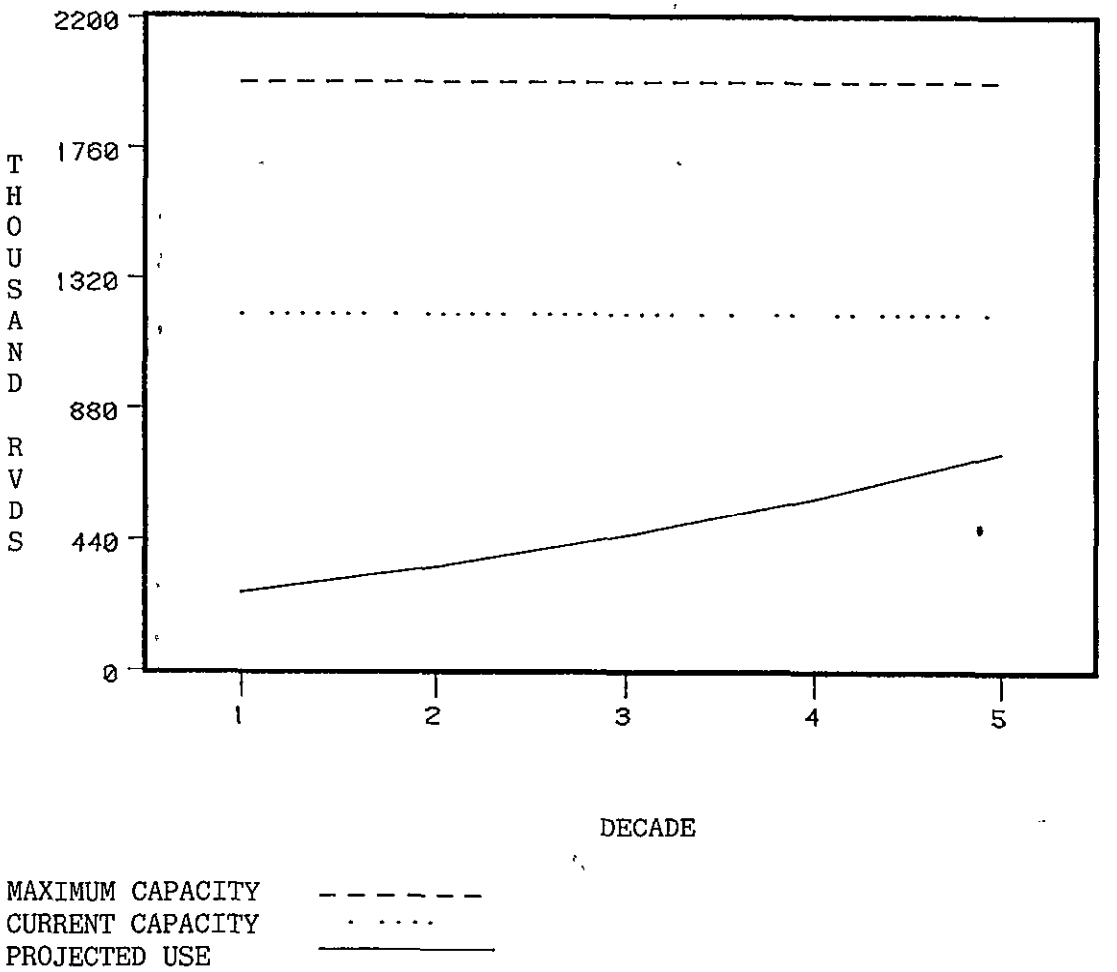
Figure V-1
Developed Recreation



2. Roaded Dispersed Recreation

Roaded dispersed recreation capacity is ample to meet anticipated use for the next 50 years (Figure V-2). The quality of hunting, fishing, firewood cutting, berry picking, camping, picnicking, or driving for pleasure experiences will change as the population increases and as the roaded area open to motorized vehicles increases.

Figure V-2
Roaded Dispersed Recreation

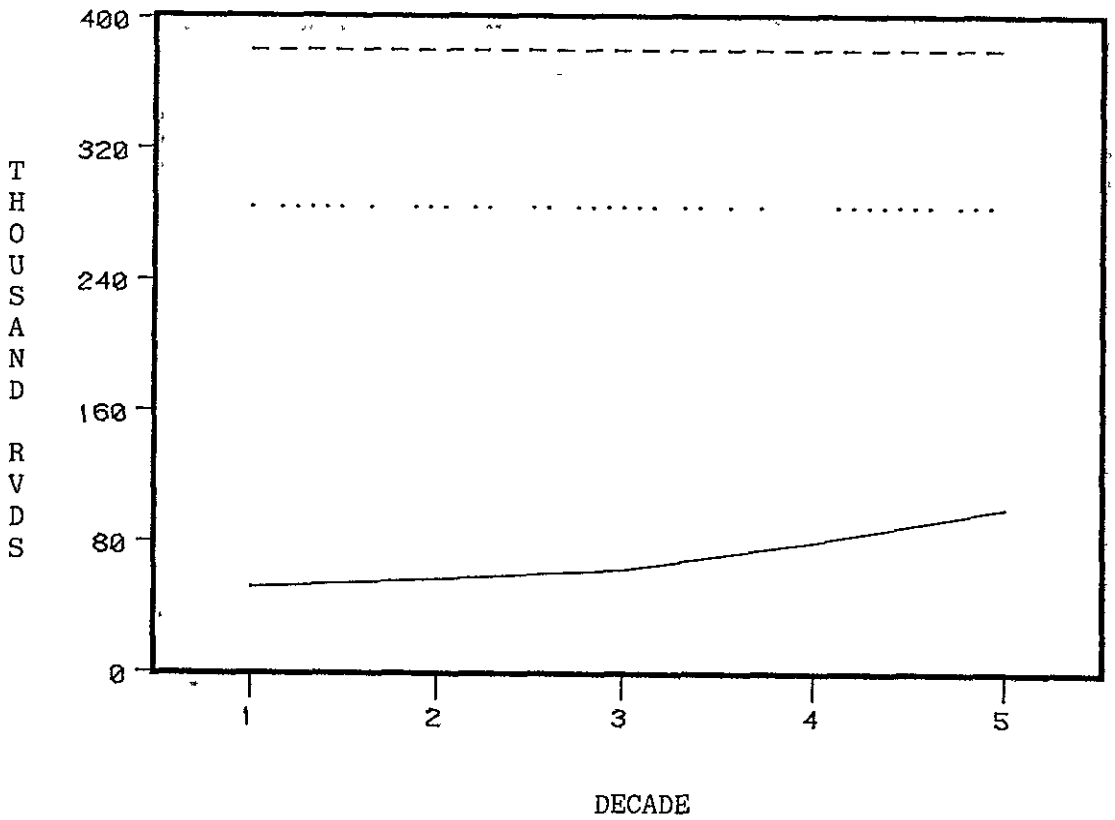


3. Roadless Semiprimitive Recreation

Existing and projected roadless, semiprimitive recreation use can be met by assigning current roadless areas to semiprimitive recreation management (Figure V-3).

Projected use can be met in the 50 years by assigning 190,000 acres of roadless land to semiprimitive recreation. Assignments below this level will reduce the quality of experience in semiprimitive areas and shift some use to wilderness areas.

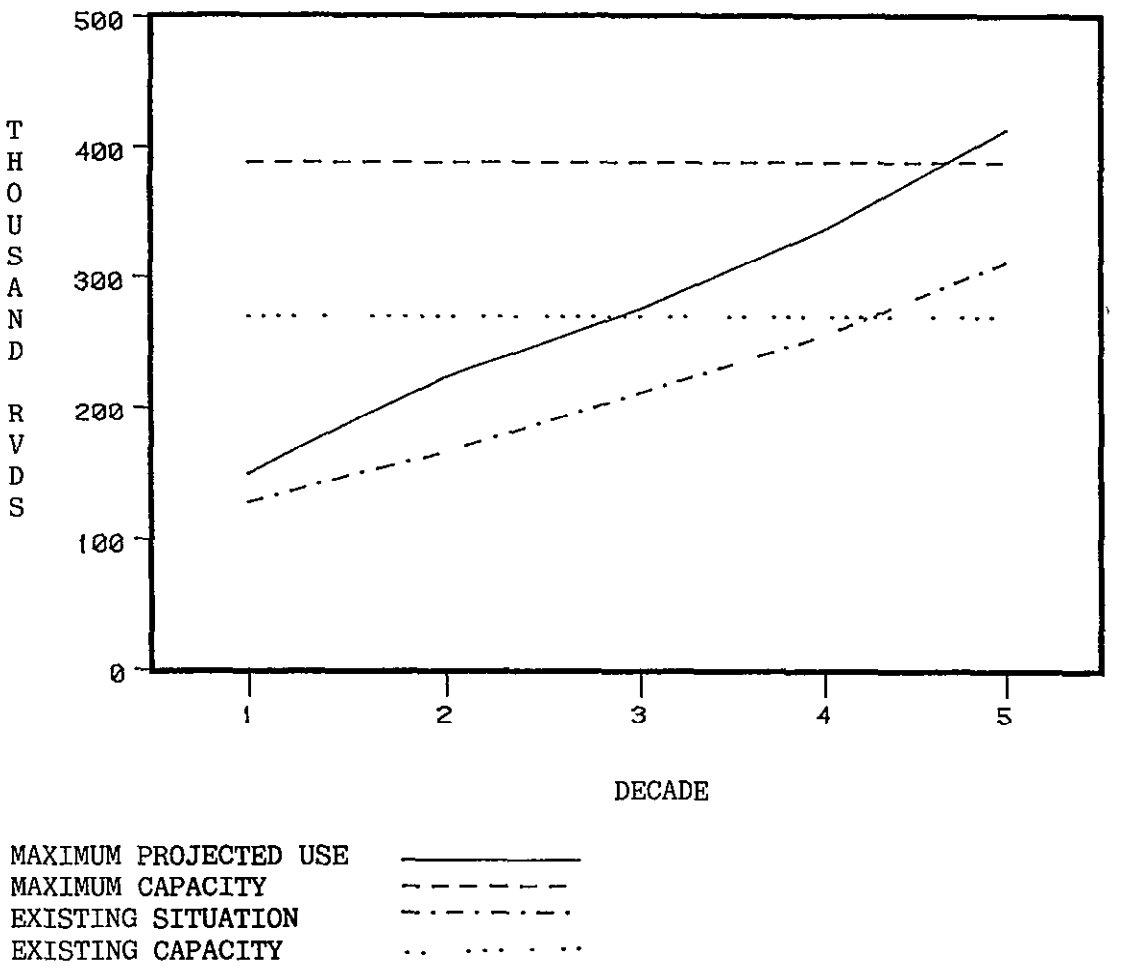
Figure V-3
Roadless Semiprimitive Recreation



4. Wilderness

Potential wilderness capacity exceeds maximum projected use until the fifth decade. Maximum use occurs when there are no semiprimitive recreation assignments and other roadless lands are developed. In this situation, the semiprimitive use is shifted to wilderness areas. If there are sufficient semiprimitive recreation opportunities, as in the existing situation, then wilderness use is projected at 85 to 90 percent of the maximum projected use. Maximum projected and existing situation use and capacities are shown in Figure V-4.

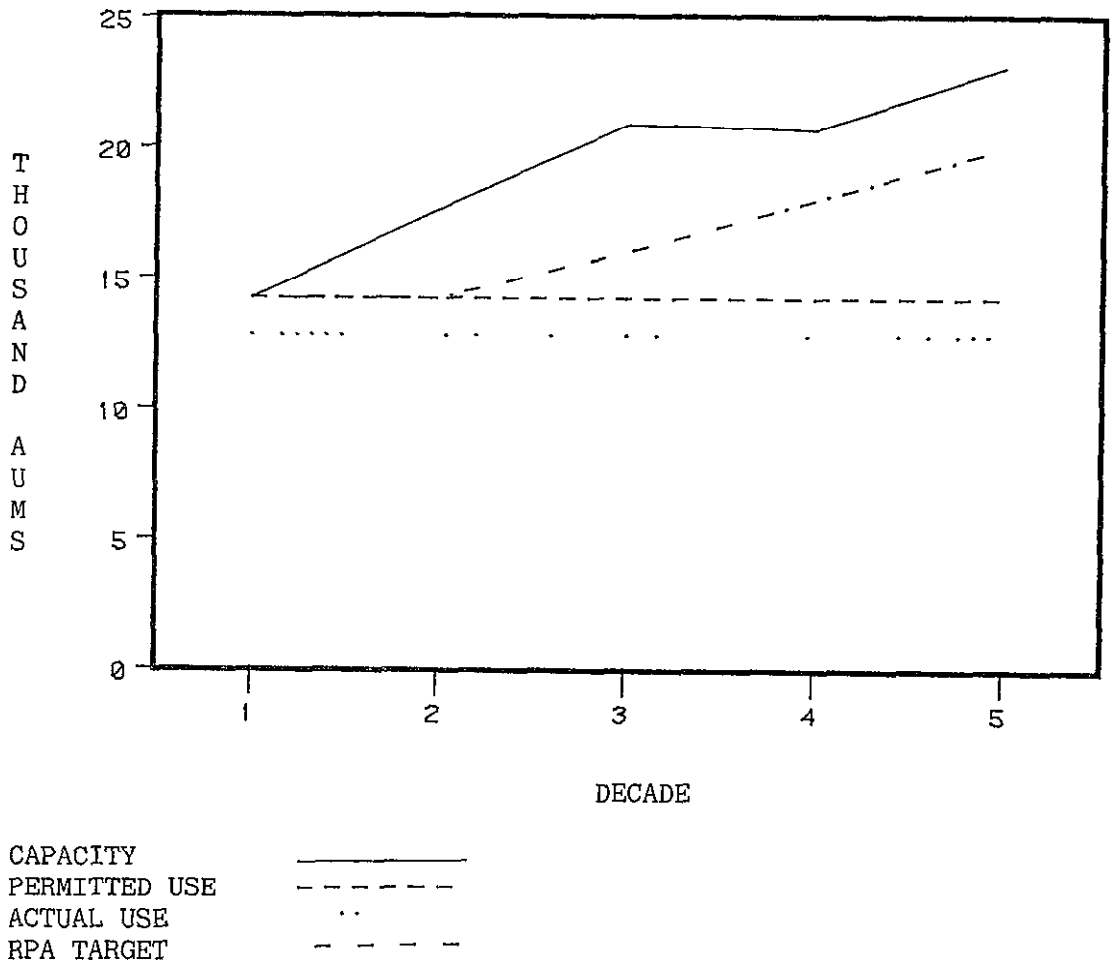
Figure V-4
Wilderness



5. Livestock Range

The capacity of suitable rangeland to support livestock exceeds current actual and permitted use as shown in Figure V-5. Permitted livestock use on the Forest has decreased from 23,900 animal unit months (AUMs) in 1950, to the 14,200 AUMs in 1980 shown in Figure V-5, and 13,000 AUMs in 1986 due to subdivision of ranches and decrease of livestock in the Valley. Demand for livestock permits is not expected to increase for the life of this Plan, however, the opportunity exists to increase use to capacity or the RPA target level.

Figure V-5
Livestock Range



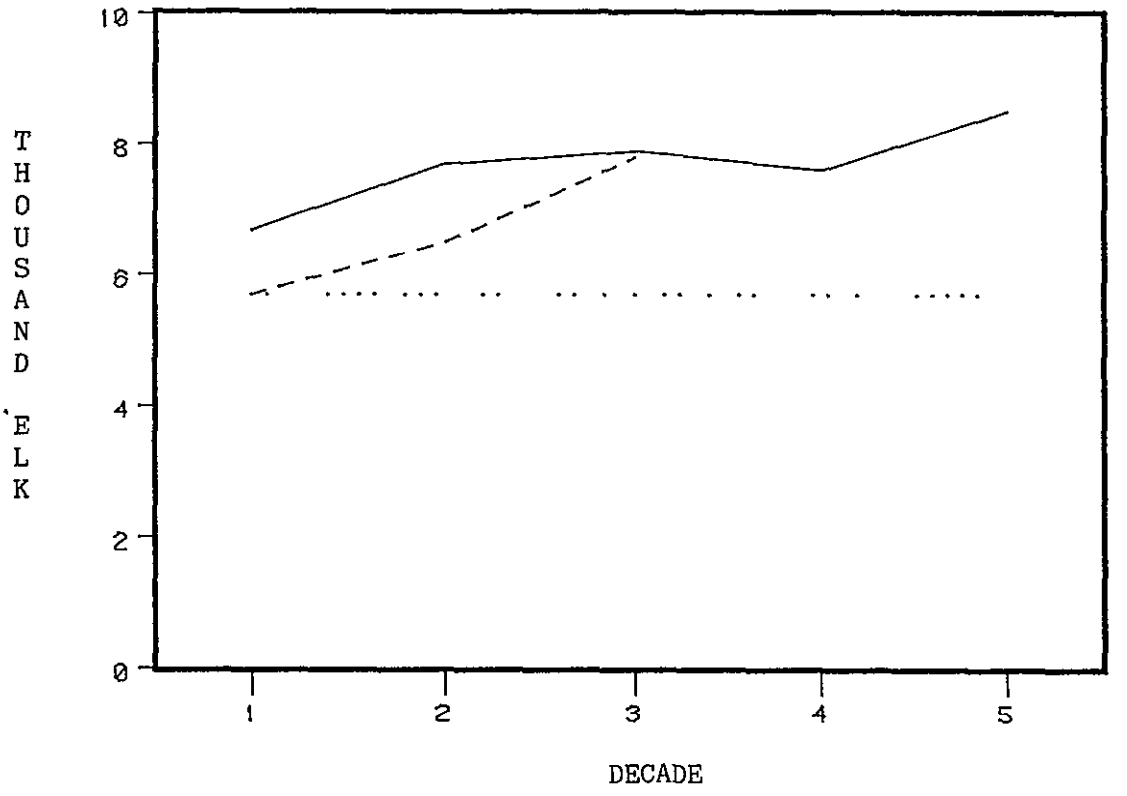
6. Elk Winter Range

The capacity of winter range to support elk, Regional Guide targets, and current population are shown in Figure V-6.

The current population is composed of 2,660 elk in Idaho on wilderness winter range and 3,000 elk in Montana on winter range outside wilderness. The opportunity exists to provide forage to meet the Regional elk population target. However the timber harvest required to increase forage production and the roads required to access timber will adversely affect hunting opportunity.

The area maintained in big game cover over the long term ranges from 40 percent to 70 percent of the nonwilderness area. The optimal cover percentage is approximately 40 percent.

Figure V-6
Elk Winter Range



CAPACITY ————————
REGIONAL TARGET – – – – – –
CURRENT POPULATION · · · · ·

7. **Fisheries**

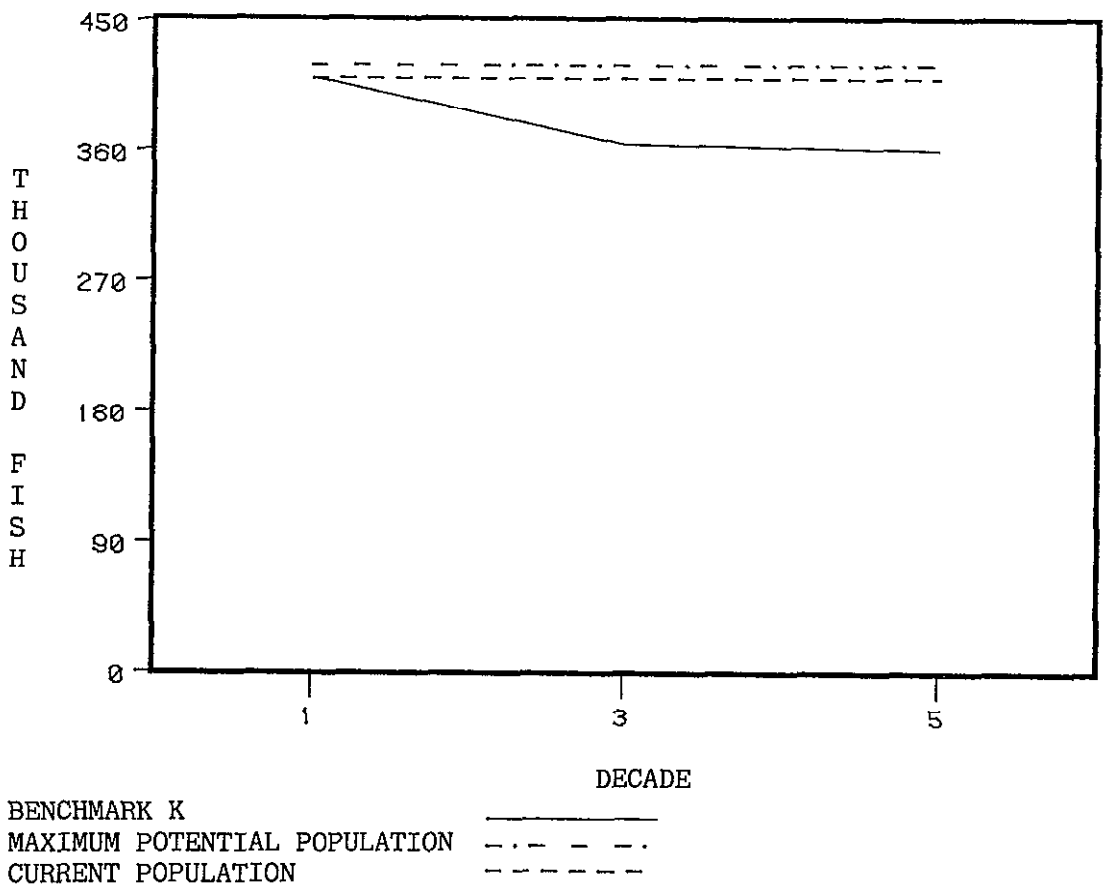
The Idaho portion of the Forest supports anadromous steelhead trout and spring chinook salmon. However, the rivers are in wilderness and affected little by Forest management activities.

There is a resident cutthroat trout fishery throughout all parts of the Forest. The most susceptible habitat is the stream habitat that supports catchable trout and is associated with development activities. The stream habitat capability to support trout is directly related to stream sedimentation caused mostly by timber harvest and road construction activities.

The current wilderness stream population and the total Forest lake population is approximately 248,500 catchable trout. The current stream population outside of wilderness is approximately 161,200 catchable trout. The population potential is limited by the number of pools in streams and habitat improvement practices can effectively increase carrying capacity by up to 9,000 fish.

Figure V-7 displays the maximum potential population, current population, and an estimate of the minimum population based on the population that results from the very high timber output levels in decades 3 and 5 of Benchmark K.

Figure V-7
Catchable Trout



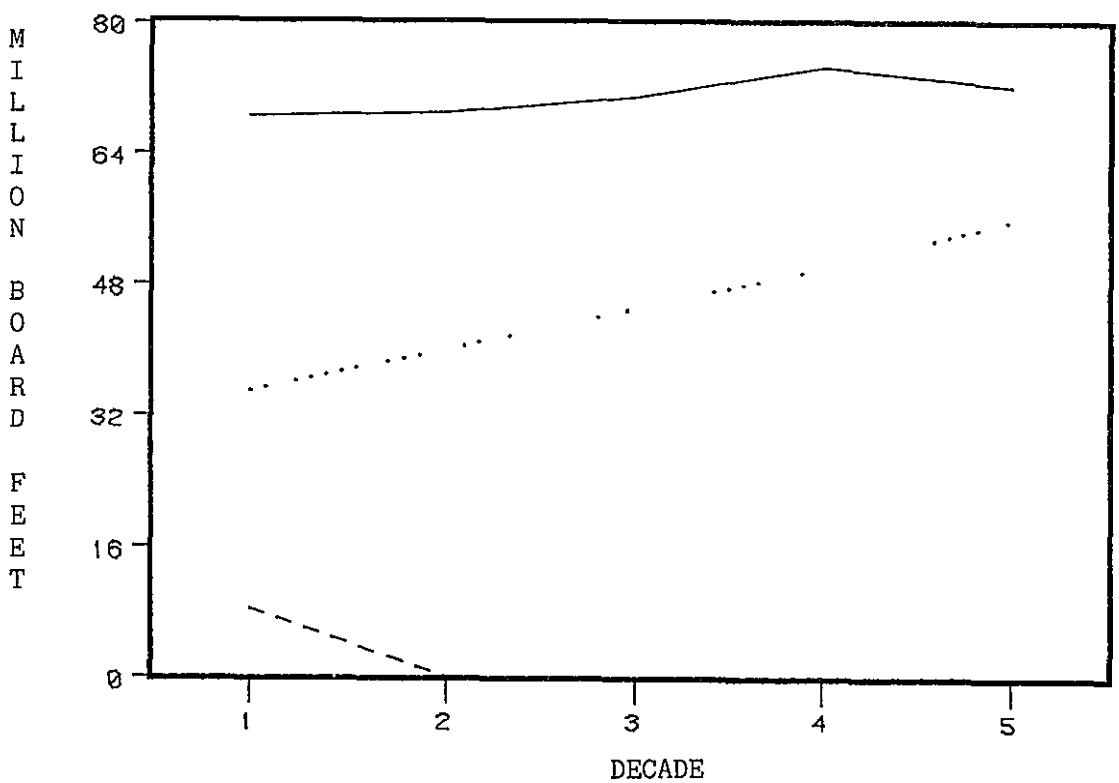
8. Timber

The land base tentatively suitable for timber production has the capacity to meet all RPA targets for the next 50 years. The minimum level is represented by Benchmark M which only harvests the volume currently under contract. Benchmark W represents the maximum potential. Benchmark L maximizes PNV and allows timber harvest on roaded lands only, but does not maximize timber harvest in decade 1. The maximum and minimum potential and the potential on currently roaded land are shown in Figure V-8.

The suitable timberland required to provide the benchmark timber outputs ranges from no acres in Benchmark M, to 369,000 acres in Benchmark L, and nearly all the tentatively suitable timber base or 586,000 acres in Benchmark K.

The Forest contributes about 15 percent of the offered volume in the four Forest bid group area. However, the Forest contributes about 55 percent of the volume requested by Ravalli County mills.

Figure V-8
Timber



BENCHMARK M, MINIMUM - - - - - -
BENCHMARK W, MAXIMUM ————————
RPA TARGET . . . . . .

9. **Present Net Value**

The maximum PNV of the Forest is $206 million as defined by Benchmark K which meets minimum management requirements, precludes timber management from existing wilderness, and meets nondeclining timber harvest flow. Timber management is efficient on all tentatively suitable timberland except 3,000 nonstocked acres. However, PNV is maximized on much of the area by delaying harvest until discounted timber prices have peaked. Timber harvest starts at 16 MMBF/year in decade 1, but increases to 63 MMBF/year in decade 2 and 79 MMBF/year in decade 3. A moderate level of elk and livestock is produced. Three-fourths of the area outside existing wilderness will be roaded.

10. **Discounted Cost**

The minimum discounted cost of $80 million is represented by the minimum level Benchmark M.

11. **Employment**

Current local employment is 1,052 jobs annually. In decade 1 employment ranges from 390 in Benchmark M to 1,790 jobs in Benchmark W.

12. **Minerals**

The potential for nonenergy minerals and oil, gas and geothermal energy resources has been evaluated. Forest lands were placed in four categories:

Category A	Withdrawn or proposed for withdrawal for mineral entry.
Category B	Statutes or executive orders require specific protection or mitigation measures for riparian zones.
Category C	Special conditions on winter game range, roadless and visual lands require special lease stipulations or plan of operations.
Category D	Standard lease stipulations and plan of operations apply.

In the MAX PNV Benchmark, existing wilderness is assigned to category A, riparian areas to category B, winter game range to category C, and the remainder of the Forest to category D. The results of the MAX PNV Benchmark assignments by mineral potential are shown in Table V-2.

Table V-2
Area of Nonenergy and Energy Resource Potential (thousands of acres)

Category	--Potential for Nonenergy---				----Potential for Energy----			
	Low	Mod-erate	High	Very High	Low	Mod-erate	High	Very High
A	600	150	2	0	738	5	0	0
B	26	35	15	1	31	45	0	0
C	140	153	29	17	200	126	0	0
D	113	191	85	22	241	193	0	0

VI. GLOSSARY

-40	Symbol for landtype group; all soils on slopes less than 40 percent.
ACCESS	See Public Access.
ACRE-EQUIVALENT	A unit of habitat output related to fish or wildlife habitat improvement projects. Acre equivalents are based on the number of acres of habitat that are influenced by one habitat acre actually modified by the habitat improvement project.
ACRE-FOOT	A measure of water or sediment volume equal to the amount which would cover an area of 1 acre to a depth of 1 foot (325,851 gallons or 43,560 cubic feet).
ACTIVITY	A measure, course of action, or treatment that is undertaken to directly or indirectly produce, enhance, or maintain forest and range land outputs or achieve administrative or environmental quality objectives.
ACTIVITY FUELS	Debris generated by a Forest activity that increases fire potential such a firewood gathering, precommercial thinning, timber harvesting, and road construction.
ACTIVITY TYPE	The further description of the actions, measures, or treatments within an activity.
ADFLUVIAL	Freshwater fish that migrate from freshwater lakes to freshwater streams to spawn.
ADMINISTRATIVE FACILITIES	Those facilities, such as Ranger Stations, work centers and cabins, which are used by the Forest Service in the management of the National Forest.
AIRSHED	Basic geographic units in which air quality is managed.
AFFECTED ENVIRONMENT	The biological and physical environment that will or may be changed by actions proposed and the relationship of people to that environment.
ALLOTMENT	See Range Allotment.
ALLOWABLE SALE QUANTITY	The quantity of timber that may be sold from the area of suitable land covered by the forest plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the "average annual allowable sale quantity".
ALTERNATIVE	A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis as expressed in goals and objectives. One of several policies, plans, or projects proposed for decisionmaking. An alternative need not substitute for another in all respects.

ALTERNATIVE, NO ACTION	An alternative that maintains established trends or management direction.
AMENITY VALUES	Resource use for which market values (or proxy values) are not or cannot be established.
ANADROMOUS FISH	Fish which spend much of their adult life in the ocean, returning to inland waters to spawn; e.g., salmon, steelhead.
ANALYSIS AREA	One or more capability areas combined for the purpose of analysis in formulating alternatives and estimating various impacts and effects.
ANALYSIS OF THE MANAGEMENT SITUATION	A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services.
ANALYSIS PERIOD, LONG TERM	A time horizon of expenditures in an analysis that is two or more 5-Year RPA planning periods in duration. RPA, program, Regional Guide, and Forest plan analyses have long-term periods.
ANALYSIS PERIOD, SHORT TERM	A time horizon of expenditures in an analysis that is only several years in duration. A budget analysis is short-term.
ANIMAL UNIT MONTH (AUM)	The quantity of forage required by the equivalent of a 1000 lb. mature cow for one month.
ANNUAL FOREST PROGRAM	The summary or aggregation of all projects for a given year that for a given level of funding, make up an integrated (multi-functional) course of action on a Forest planning area.
AQUATIC ECOSYSTEM	A stream channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.
ARTERIAL ROADS	Roads comprising the basic access network for National Forest System administrative and management activities. These roads serve all resources to a substantial extent, and maintenance is not normally determined by the activities of any one resource. They provide service to large land areas and usually connect with public highways or other Forest arterial roads to form an integrated network of primary travel routes. The location and standards are often determined by a demand for maximum mobility and travel efficiency rather than by a specific resource management service. Usually they are developed and operated for long term land and resource management purposes and constant service.
ASSESSMENT	The Renewable Resource Assessment required by the Resource Planning Act.

ASSET, CAPITAL	A natural resource, manmade structure, facility, or improvement in natural resources used as an input in production processes.
ASSET, RESIDUAL	The remaining value of a capital asset at the end of the time horizon of the planning or analytical process.
AUM	See Animal Unit Month.
AVAILABLE FOREST LAND	Land that has not been legislatively or administratively withdrawn from timber production by the Secretary of Agriculture or Forest Service Chief.
AVERAGE ANNUAL CUT	The volume of timber harvested in a decade, divided by 10.
AVOIDANCE AREA	Areas where utility corridor establishment and use conflict with land use and management objectives, the effects of which would be difficult or impossible to mitigate. Examples include semi-primitive recreation designations, research natural areas, retention visual quality objectives, Wild and Scenic Rivers.
BASE SALE SCHEDULE	A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade and this planned sale and harvest for any decade is not greater than the long-term sustained yield capacity.
BENCHMARK	Reference points that define the bounds within which feasible management alternatives can be developed. Benchmarks may be defined by resource output or economic measures.
BENEFIT-COST RATIO	Measure of economic efficiency, computed by dividing total discounted primary benefits by total discounted economic costs.
BENEFIT, DIRECT	A primary benefit that fulfills specified objectives of the policy, program, or project.
BENEFIT, DISCOUNTED	Benefit values adjusted so that future benefit values are reduced to the present time for comparison purposes. In this analysis, these are timber, range, recreation, mineral and special-use benefit values.
BENEFIT, INDUCED	A primary benefit from an output that is incidental to the objectives of the policy, program, or project.
BENEFIT, PRIMARY	A benefit accruing to resource owners from a primary output, which may be direct or induced, or a residual asset. Primary benefits are components of net public benefits.
BENEFIT, SECONDARY	A benefit accruing to parties other than the resource owners, including effects on local, Regional, and national economies and on consumers of outputs. Secondary benefits are not necessarily included in net public benefits.

BENEFIT (VALUE)	Inclusive terms to quantify the results of a proposed activity, project or program expressed in monetary or nonmonetary terms.
BEST MANAGEMENT PRACTICES (BMP)	The set of practices in the Forest Plan which, when applied during implementation of a project, ensures that water related beneficial uses are protected and that State water quality standards are met. BMP's can take several forms. Some are defined by State regulation or memoranda of understanding between the Forest Service and the States. Others are defined by the Forest interdisciplinary planning team for application Forest-wide. Both of these kinds of BMP's are included in the Forest Plan as Forest-wide Standards. A third kind are identified by the interdisciplinary team for application to specific management areas; these are included as Management Area Standards in the appropriate management areas. A fourth kind, project level BMP's, are based on site specific evaluation and represent the most effective and practicable means of accomplishing the water quality and other goals of the specific area involved in the project. These project level BMP's can either supplement or replace the Forest Plan standards for specific projects.
BIG GAME	Those species of large mammals normally managed as a sport hunting resource.
BIG GAME SUMMER RANGE	Land used by big game during the summer months.
BIG GAME WINTER RANGE	The area available to and used by big game through the winter season.
BIOLOGICAL POTENTIAL	The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.
BIOLOGICAL GROWTH POTENTIAL	The average net growth attainable in a fully stocked natural forest stand.
BOARD FOOT	A unit of measurement represented by a board one foot square and one inch thick.
BROADCAST BURN	Allowing a controlled fire to burn over a designated area within well-defined boundaries, for reduction of fuel hazard, as a silvicultural treatment, or both.
BOARD FOOT/ CUBIC FOOT CONVERSION	The mathematical ratio of the board feet contained in one cubic foot of timber. This ratio varies with tree species, diameter, height and form factors.
BROWSE	Twigs, leaves, and young shoots of trees and shrubs on which animals feed; in particular, those shrubs which are utilized by big game animals for food.

CANOPY	The more or less continuous cover of branches and foliage formed collectively by the crown of adjacent trees and other woody growth.
CAPABILITY	The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fires, insects, and disease.
CAPABILITY AREA	A geographic delineation used to describe characteristics of the land and resources in integrated Forest planning. Capability areas may be synonymous with ecological land units, ecosystems or land response units.
CAPITAL INVESTMENT	Investment in facilities such as roads and structures with specially-appropriated funds.
CARRYING CAPACITY	1 (recreation): the amount of recreation use an area can sustain without deterioration of site quality; 2 (wildlife): the maximum number of animals an area can support during a given period of the year; 3 (range): the maximum stocking rate possible without damaging the vegetation or related resources. Carrying capacity may vary from year to year on the same area due to fluctuating forage production.
CATCHABLE TROUT	Game fish 6 inches or longer.
CAVITY	A hollow in a tree that is used by birds or mammals for roosting and reproduction.
CEQ	See Council of Environmental Quality.
CFR	Code of Federal Regulations.
CHARGEABLE VOLUME	Chargeable volume is all volume that is included in the growth and yield projections for the selected management prescriptions used to arrive at the "allowable sale quantity," based on Regional utilization standards.
CLEARCUTTING	Harvesting of all trees in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as separate age class in planning. Regeneration is obtained through natural seeding, or through planting or direct seeding.

CLASS I DESIGNATION	An air quality classification in which the maximum allowable increase in concentration of sulfur dioxide over the baseline is 2 micrograms per cubic meter for the annual arithmetic mean, 5 micrograms per cubic meter in a 24 hour period, and 25 micrograms per cubic meter in a 3 hour period. The annual geometric mean of particulate matter shall not increase more than 5 micrograms per cubic meter above the baseline and the 24 hour maximum shall not increase more than 10 micrograms per cubic meter over the baseline.
CLIMAX PLANT COMMUNITY	The final or stable biotic community in a developmental series.
CLOSURE	The administrative order that does not allow specified uses in designated areas or on Forest development roads or trails.
CMAI	See Culmination of Mean Annual Increment.
COEFFICIENT (COST, VALUE, YIELD)	The numeric units used to include costs, values, and outputs in the analysis model used in the formulation of the Forest Plan.
COLLECTOR ROADS	Roads constructed to serve two or more elements but which do not fit into the other two road categories (arterial or local). Construction costs of these facilities are prorated to the respective element served. These roads serve smaller land areas and are usually connected to a Forest arterial or public highway. They collect traffic from local Forest roads or terminal facilities. The location and standard are influenced by both long term multi-resource service needs and travel efficiency. Forest collector roads are operated for constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.
COMMERCIAL FOREST LAND (SUITABLE TIMBER LAND)	Land that is producing, or is capable of producing, crops of industrial wood and (1) has not been withdrawn by Congress, the Secretary of Agriculture or the Chief of the Forest Service; (2) where existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; and (3) where existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be obtained within 5 years after final harvesting.
COMMERCIAL THINNING	Any type of thinning producing merchantable material at least to the value of the direct cost of harvesting.
COMMERCIAL TIMBER SALES	The selling of timber from National Forest lands for the economic gain of the party removing and marketing the trees.
COMMODITIES	Resources with commercial value; all resource products which are articles of commerce, such as timber, range forage and minerals.

COMMON MATERIALS	See Minerals, Common Variety.
COMMUNITY COHESION	The degree of unity and cooperation within a community in working toward shared goals and solutions to problems.
COMMUNITY STABILITY	The capacity of a community to absorb and cope with change without major hardship to institutions or groups within the community.
COMPACTION	An increase in soil bulk density. Compaction is considered detrimental when increased by 20 percent or more over the undisturbed level in volcanic ash soils and 15 percent or more over the undisturbed level in other soils.
CONCERN	See Management Concern.
CONDITION CLASS	A descriptive category of the existing tree vegetation as it relates to size, stocking and age.
CONFINE	To restrict a fire within determined boundaries established either prior to the fire, during the fire, or in an escaped fire situation analysis. Surveillance may be appropriate when the fire will be self-confined with a defined perimeter.
CONGRESSIONALLY DESIGNATED AREAS	Areas established by Congressional legislation, such as National Wildernesses, National Wild and Scenic Rivers, and National Recreation Areas.
CONSTRAINT	A confinement or restriction on the range of permissible choices.
CONSUMPTIVE USES	Uses of a resource that reduce the supply. Examples of some consumptive uses of water are irrigation, domestic and industrial water use, grazing, and timber harvest.
CONTAIN	To surround a fire, and any spot fires with control lines, so that there is a reasonable expectation the fire spread will be checked under prevailing and predicted conditions.
CONTINENTAL DIVIDE	The drainage divide between waters flowing to the Atlantic Ocean and the Pacific Ocean.
CONTROL	To complete the control line around a fire, any spot fires, and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control line; and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under foreseeable conditions.
CORD	A unit of gross volume measurement for stacked roundwood based on external dimensions, generally implies a stack of four feet by four feet vertical cross section and eight feet long, contains 128 stacked cubic feet.

CORDUROY	A method of subgrade reinforcement often used on trails and for some roads whereby logs are placed perpendicular to the traveled way to support a surfacing material.
CORRIDOR	A linear strip of land identified for the present or future location of transportation or utility right-of-ways within its boundaries.
COST	The negative or adverse effects or expenditures resulting from an action. Costs may be monetary, social, physical or environmental in nature.
COST, DISCOUNTED	Costs adjusted so that future costs are reduced to the present time for comparison purposes. In this analysis, these are fixed and variable Forest Service and cooperator costs.
COST EFFICIENCY	The usefulness of specified inputs (costs) to produce specified outputs (benefits). In measuring cost efficiency, some outputs, including environmental, economic, or social impacts, are not assigned monetary values but are achieved at specific levels in the least cost manner. Cost efficiency is usually measured using present net value, although use of benefit-cost ratios and rates of return may be appropriate.
COST-SHARE	Refers to the process of cooperating in the joint development of a road system. The document executed through this process, called "Road Right-of-Way Construction and Use Agreement," specifies the terms of developing the transportation system for a specified land area.
COUNCIL ON ENVIRONMENTAL QUALITY	An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.
COVER/FORAGE RATIO	The ratio of tree cover (usually conifer types) to foraging foraging areas (natural openings, clearcuts, etc.)
CRITICAL HABITAT	Specific areas within the geographical area occupied by the species on which are found those physical and biological features (1) essential to the conservation of the species and (2) which may require special management considerations or protection. Critical habitat shall not include the entire geographic area which can be occupied by the threatened and endangered species.
CUBIC FOOT	The amount of wood volume equivalent to a cube 1 foot by 1 foot by 1 foot.

CULMINATION OF MEAN ANNUAL INCREMENT (CMAI)	The point at which the volume increment for a tree or stand of trees has achieved it's highest mean value. Mean annual increment is expressed in cubic feet measure and is based on expected growth according to the management intensities and utilization standards assumed in the Forest Plan. The CMAI is calculated by dividing the attained growth (volume) by it's corresponding age.
CULTURAL RESOURCES	The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events, as a sacred area of native peoples, etc.) of an area of prehistoric or historic occupation.
CUT SLOPE	Road construction slopes that are made by excavation.
CUTTING CYCLE	For a crop or stand, the planned interval of time between the beginning of one cutting period and the beginning of the succeeding cutting period.
DBH	See Diameter Breast Height.
DEMAND	The amount of output that users are willing to take at a specific price, time period, and conditions of sale.
DEMAND ANALYSIS	A study of the factors affecting the schedule of demand for a good or service, including the price-quantity relationship, if applicable.
DEPARTURE	A schedule which deviates from the principle of nondeclining flow by exhibiting a planned decrease in the timber sale and harvest schedule at any time in the future.
DEPENDENT COMMUNITIES	Communities whose social, economic, or political life would become discernibly different in important respects if market or non-market outputs from the National Forests were cut off.
DESIRED FUTURE CONDITION	A description of what the Forest will be like after implementing the Forest Plan goals, objectives and standards for a specified period.
DEVELOPMENT	Preparing the mineral deposit or reservoir for production once the general shape, extent, quality and quantity have been established in the exploration phase. An economic resource has been identified and an analysis is being made to determine the best means of extraction and processing. Operations, processing and storage sites are constructed. Surface disturbance may be site intensive but not widespread.
DEVELOPED RECREATION	Recreation that occurs where improvements enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

DEVELOPED RECREATION SITES	Relatively small, distinctly defined area where facilities are provided for concentrated public use, i. e., campgrounds, picnic areas and swimming areas.
DIAMETER BREAST HEIGHT (DBH)	The diameter of a tree measured 4 1/2 feet above the ground.
DIRECT EFFECTS	Effects on the environment which occur at the same time and place as the initial cause or action.
DISCOUNT RATE	An interest rate that reflects the cost or time value of money. It is used in discounting future costs and benefits.
DISCOUNTING	An economic adjustment for the time value of money; mathematical reduction of costs and/or benefits which occur in the future to the present time for purposes of comparison.
DISPERSED RECREATION	That portion of outdoor recreation use which occurs outside of developed sites in the unroaded and roaded Forest environment i.e., hunting, backpacking and berrypicking.
DISPLACEMENT	The removal of the topsoil or nutrient enriched soil horizons. Removal is detrimental when more than 50 percent of the topsoil or nutrient enriched A or AC horizons or A and B horizons of volcanic ash enriched soils is displaced from an area of 100 square feet or more which is at least 5 feet in width. Mixing of surface soil layers is not considered as detrimental displacement.
DISTRICT RANGER	The official responsible for administering the National Forest System Lands on a Ranger District.
DIVERSITY	The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.
ECONOMICS	The study of how limited resources, goods, and services are allocated among competing uses.
ECOSYSTEM	A complete, interacting system of organisms considered together with their environment (for example; a marsh, a watershed, or a lake.)
ECOTONE	A transition or junction zone between two or more diverse communities (ecosystems).
EDAPHIC	The influence of soils on living organisms, particularly plants, including man's use of the land for plant growth.
EFFECTS	Physical, biological, social and economic results (expected or experienced) resulting from achievement of outputs. Effects can be direct, indirect and cumulative.

EFFICIENCY, ECONOMIC	The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations. Economic efficiency is usually measured using present net value, though use of benefit-cost ratios and rates-of-return may sometimes be appropriate.
ELK HABITAT EFFECTIVENESS	An index of the capability of an area to provide security for elk. It is based on hiding and thermal cover present and roads open to public motorized use.
ELK HIDING COVER	Vegetation, primarily trees, capable of hiding 90 percent of an elk seen from a distance of 200 feet or less.
ELK SECURITY AREA	Security is a function of space, topography, and hiding cover, influenced by human access. The size of the area necessary to provide security will vary with the degree of access and hiding cover characteristics. In this analysis, areas of 5,000 to 8,000 acres below 7,000 feet elevation that provide high-use fall habitat for elk are security areas.
ELK SECURITY COVER (EFFECTIVE ELK SECURITY COVER)	Elk hiding cover modified by open roads. The greater the density of open roads within an area, the less effective is the hiding cover in providing security for elk.
ENDANGERED SPECIES	Any species, plant or animal, which is in danger of extinction throughout all or a significant portion of its' range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.
ENDING INVENTORY CONSTRAINT (EIC)	Constraint to ensure that the total timber volume left at the the end of the planning horizon will equal or exceed the volume that would occur in a managed Forest.
ENERGY RESOURCES	See Minerals, Locatable.
ENVIRONMENTAL ANALYSIS	An analysis of alternative actions and their predictable short and long-term environmental effects which include physical, biological, economic, social, and environmental design factors and their interactions.
ENVIRONMENTAL ASSESSMENT	A concise public document for which a Federal agency is responsible that serves to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare and environmental impact statement or a finding of no significant impact.

(2) Aid an agency's compliance with the National Environmental Policy Act when no environmental impact statement is necessary.

(3) Facilitate preparation of an environmental impact statement when one is necessary.

ENVIRONMENTAL IMPACT STATEMENT, DRAFT (DEIS) — A detailed written statement as required by Sec. 102(2)(C) of the National Environmental Policy Act.

ENVIRONMENTAL IMPACT STATEMENT FINAL (FEIS) — The final version of the public document required by NEPA (see above).

EPHEMERAL STREAMS — Streams that flow only as a direct response to rainfall or snowmelt events. They have no baseflow.

EROSION — The group of processes whereby earth or rocky material is worn away by natural sources such as wind, water or ice and removed from any part of the earth's surface.

ESCAPEMENT — The number of adult anadromous fish escaping past commercial and recreational harvest fisheries and other sources of mortality, to upstream spawning areas.

EVEN-AGED MANAGEMENT — The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. Managed even-aged Forests are characterized by a distribution of the stands of varying ages (and, therefore, tree sizes) throughout the Forest area. The difference in age between trees forming the main canopy level of the stand does not exceed 20 percent of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size for regeneration and is harvested. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.

EXCLUSION AREA — Areas where utility corridors are not allowed, for example, wilderness, recommended wilderness and Congressionally designated wilderness study areas.

EXPLORATION — Establishing the nature (that is, shape, extent, quality, quantity and value) of the target identified in the prospecting phase. In addition to the techniques in prospecting, subsurface examinations may be made by drilling wells, boring holes, digging trial pits or renovating underground mine workings. Economic resources may be identified and reserves demonstrated. Surface disturbance may be widespread but not site intensive.

EXTENSIVE TIMBER MANAGEMENT	The practice of forestry on a basis of low operating and investment costs per acre.
EXTRACTIVE USE	Use of natural resources that removes them from their natural setting.
FAMILY UNIT	A camp or picnic spot with table, fireplace, tent pad, and parking spot.
FEE SITE	A Forest Service recreation area in which users must pay a fee. Fee sites must meet certain standards and provide certain facilities as specified in the Forest Service Manual.
FILL SLOPE	Road construction slopes that are made by depositing soil from excavated areas.
FINAL CUT	Removal of the last seed bearers or shelter trees after regeneration is considered to be established under a shelterwood system.
FLOOD PLAIN	The lowland and relatively flat area adjoining inland waters, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.
FORAGE	All browse and nonwoody plants available to livestock or wildlife for feed.
FORB	Any herbaceous plant other than true grasses, sedges or rushes.
FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974	An act of Congress which requires the assessment of the Nation's renewable resources and the periodic development of a national renewable resources program. It also requires the development, maintenance and, as appropriate, revision of land and resource management plans for units of the National Forest System (e.g. National Forest).
FOREST LAND	Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use. Lands developed for non-forest use include areas for crops, improved pasture, residential, or administrative areas, improved roads of any width, and adjoining road clearing and powerline clearing of any width. The term "occupied" when used to define forest land, will be measured by canopy cover of live forest trees at maturity. The minimum area for classification of forest land will be 1 acre or greater. Unimproved roads, trails, stream and clearings in forest areas are classified as forest if they are less than 120 feet in width.

FOREST LOCAL ROADS	Roads constructed and maintained for, and frequented by, the activities of a given resource element. Some uses may be made by other element activities, but normally maintenance is not affected by such use. These roads connect terminal facilities with Forest collector or Forest arterial roads or public highways. The location and standard, usually are determined by the requirement of a specific resource activity rather than by travel efficiency. Forest local roads may be developed and operated for constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.
FOREST SUPERVISOR	The official responsible for administering the National Forest System lands in a Forest Service Administrative unit, which may consist of one or more National Forests or all the Forests within a State.
FOREST SYSTEM ROAD	A road wholly or partly within or adjacent to and serving the National Forest System and which is necessary for the protection, administration and utilization of the National Forest System and the use and developments of it's resources.
FORPLAN	A linear programing system used for developing and analyzing Forest planning alternatives.
FOREST-WIDE MANAGEMENT GUIDELINES	An indication or outline of policy or conduct dealing with the basic management of the Forest. Forest-wide management guidelines apply to all areas of the Forest regardless of the other management prescriptions applied.
FSH	Forest Service Handbook.
FSM	Forest Service Manual.
FUELBREAK	A zone in which fuel quantity has been reduced or altered to provide a position for suppression forces to make a stand against wildfire. Fuel breaks are designated or constructed before the outbreak of a fire. Fuel breaks may consist of one or a combination of the following: Natural barriers, constructed fuelbreaks, manmade barriers.
FUELS	Include both living plants; dead, woody vegetative materials; and other vegetative materials which are capable of burning.
FUELS MANAGEMENT	Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.
FUELS TREATMENT	The rearrangement or disposal of natural or activity fuels to reduce the fire hazard.

FULL-SERVICE MANAGEMENT	The administration, operation and maintenance of developed recreation sites to established standards with the objective to provide a pleasant recreation experience for the visitor and exceed the minimum health and safety needs of the visitors.
FULL BENCH	Roads that are built entirely by excavation, usually in steep terrain. The road surface is entirely on undisturbed material.
GAME SPECIES	Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fisherman under State or Federal laws, codes, and regulations.
GOAL	A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principal basis from which objectives are developed.
GOODS AND SERVICES	The various outputs, including onsite uses, produced from forest and rangeland resources.
GRAZING ALLOTMENT	See Range Allotment.
GROUP SELECTION CUTTING	A cutting method to develop and maintain uneven-aged stands by the removal of small groups of trees to meet a predetermined goal of size distribution and species composition in remaining stands.
GROWING STOCK LEVEL	A relative stand density measure used to guide a management objective such as maximizing timber volume yields or optimizing big game thermal cover.
GUIDELINE	See Standard and Guideline.
HABITAT TYPE	An aggregation of all land areas potentially capable of producing similar plant communities at climax.
HABITAT TYPE GROUP	A logical grouping of habitat types to facilitate resource planning and public presentations.
HIDING COVER	Trees of sufficient size and density to conceal animals from view at 300 feet.
HT123	Vegetative habitat type working group containing most Douglas-fir climax habitat types.
HT4	The working group that equates to the subalpine fir/beargrass vegetative habitat type.
HT567	The working group that equates to moist site vegetative habitat types, mostly subalpine fir/menziesia.

IMPACT ANALYSIS AREA	The delineated area subject to significant economic and social impacts from Forest Service activities included in an economic or social impact analysis.
IMPROVEMENT CUTTING	Removing trees of undesirable species, form, or condition from the main canopy in stands past the sapling stage to improve the composition and quality.
INDICATOR SPECIES	Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish including those that are socially or economically important.
INDIRECT EFFECTS	Secondary effects which occur in locations other than the initial action or significantly later in time.
INDIVIDUAL TREE SELECTION HARVEST	A cutting method to develop and maintain uneven-age stands by the removal of selected trees from specified age classes over the entire stand area in order to meet a predetermined goal of age distribution and species in the remaining stand.
INDUSTRIAL WOOD	All commercial roundwood products except fuelwood.
INSTREAM FLOWS	The minimum water volume (cubic feet per second) in each stream necessary to meet seasonal streamflow requirements for maintaining aquatic ecosystems, visual quality, recreational opportunities and other uses.
IN-MIGRATION	The movement of human population into an area.
INTEGRATED PEST MANAGEMENT	A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategies includes the impact of the unregulated pest population on various resource values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable.
INTENSIVE GRAZING	Grazing management that controls distribution of cattle and duration of use on the range, usually by fences, so parts of the range are rested during the growing season.
INTER-DISCIPLINARY TEAM (ID TEAM)	A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view to bear on the problem.

INTERMEDIATE HARVEST	Any removal of trees from a stand between the time of its formation and the regeneration cut. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.
INTERMITTENT STREAM	A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow.
INTERPRETATIVE SERVICES	Visitor information services designed to inform and educate Forest visitors improving their understanding, appreciation and enjoyment of National Forest resources.
INVENTORY DATA	Recorded measurements, facts, evidence, or observations on Forest resources such as soil, water, timber, wildlife, range, geology, minerals, and recreation which was used to determine the capability and opportunity of the Forest to be managed for those resources.
ISSUE	See Public Issue.
JACKPOT BURNING	Burning areas of fuel concentrations to reduce fire hazard.
"KEY REACHES" OF WATERSHED SYSTEM	A representative stream segment that can be expected to be sensitive to water resource changes and which adequately reflects the effects of management of the stream channel, the water, and their beneficial uses.
KEY SUMMER RANGE	An area that is potentially capable of supporting big game during the summer use period.
KEY WINTER RANGE	The portion of the yearlong range where big game find food and/or cover during severe winter weather.
LAND EXCHANGE	The conveyance of non-Federal Land or interests to the United States in exchange for National Forest System land or interests in land.
LANDLINE LOCATION	The legal identification, accurate location, and description of property boundaries.
LANDTYPE	An inventory map unit with relatively uniform potential for a defined set of land uses. Properties of soils, landform, natural vegetation and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.
LANDTYPE GROUP	A logical grouping of landtypes that facilitate resource planning.
LEASABLE MINERALS	See Minerals, Leasable.

LEVEL I FIRE ANALYSIS	General fire management analysis to provide historical information that assists the interdisciplinary team in the analysis of the management situation and formulation of alternatives for the Forest Plan.
LEVEL II FIRE ANALYSIS	An analytical process which guides the implementation of fire management activities of the Forest Plan.
LINEAR PROGRAMMING	A mathematical method used to determine the optimal distribution of limited resources between competing demands when both the objective (e.g., profit or cost) and the restrictions on its attainment are expressible as a system of linear equalities or inequalities (e.g., y=a+bx).
LIMITED SURFACE USE STIPULATION	A mineral lease clause, which, if attached to a mineral lease, prohibits surface disturbing activities on the lease pending submission of a surface use and operations plan which is satisfactory to the BLM and the surface management agency for protection of special existing or planned uses. This stipulation may, when site-specific operations are proposed and analyzed, be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.
INDUCED EFFECT OR IMPACT	See Benefit, Induced.
INTENSIVE TIMBER MANAGEMENT	The practice of forestry so as to obtain a high level of volume and quality of outturn per unit of area, through the application of the best techniques of silviculture and management.
LOCAL DEPENDENT INDUSTRIES	Local industries relying on National Forest outputs for economic activity.
LOCAL ROAD	See Forest Local Road.
LOCATABLE MINERALS	See Minerals locatable.
LOESS	A uniform and unstratified fine sand or silt transported by wind.
LONG-TERM SUSTAINED YIELD CAPACITY (LTSY)	The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified management intensity consistent with multiple use objectives.
LTSY	See Long-term Sustained Yield.
M	Thousand
MM	Million

MAUM	Thousand Animal Unit Months.
MBF	Thousand Board feet.
MMBF	Million Board feet.
MMCF	Million Cubic feet.
MN+40	Symbol for landtype group; moderately- to non-sensitive soils on 40-60 percent slopes.
MANAGEMENT ACTION	Any activity undertaken as part of the administration of the Forest.
MANAGEMENT AREA	An aggregation of capability areas which have common management direction and may be noncontiguous in the Forest. Consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns.
MANAGEMENT CONCERN	An issue, problem, or a condition which constrains the range of management practices identified by the Forest Service in the planning process.
MANAGEMENT DIRECTION	A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them.
MANAGEMENT EFFECTS	Physical, biological, social and economic responses to management practices.
MANAGEMENT EMPHASIS	A management practice or combination of management practices designed to stress production of a particular type of output or mix of outputs.
MANAGEMENT INTENSITY	A management practice or combination of management practices and associated costs designed to obtain different levels of goods and services.
MANAGEMENT OPPORTUNITY	A statement of general actions, measures, or treatments that address a public issue or management concern.
MANAGEMENT PRACTICE	A specific activity, measure, course of action, or treatment. Proposed management practices are those scheduled in the first decade of Forest Plan implementation. Probable management practices are those scheduled in the second decade of Forest Plan implementation.
MANAGEMENT PRESCRIPTION	Management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

MANAGEMENT STANDARDS AND GUIDELINES	See Standard and Guideline.
MARKET VALUE	The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.
MATURE TIMBER	Individual trees or stands of trees that in general are at their maximum rate in terms of the physiological processes expressed as height, diameter, and volume growth.
MAXIMUM MODIFICATION	See Visual Quality Objective.
MAXIMUM RESOURCE POTENTIAL	The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.
MEAN ANNUAL INCREMENT	The total volume increase in a tree or stand of trees up to a given age, divided by that age.
MINERAL ENTRY	The filing of a mining claim on Federal land to obtain the right to mine any locatable minerals it may contain. Also the filing for a mill site on Federal land for the purpose of processing off-site locatable minerals.
MINERAL WITHDRAWAL	A formal designation by the Secretary of Interior which precludes entry or disposal of mineral commodities under the mining and/or mineral leasing laws.
MINERAL EXPLORATION	The search for valuable minerals.
MINERAL PRODUCTION	The extraction of mineral deposits.
MINERAL RESOURCE POTENTIAL	The characteristic attributed to a geologic terrain that suggests the possible presence of mineral resources - metalic, nonmetallic, or energy.
MINERALS, COMMON VARIETY	Deposits of sand, stone, gravel, etc. of widespread occurrence and not having distinct or special value. These deposits are used generally for construction and decorative purposes and are disposed of under the Materials Act of 1947.
MINERALS, LEASABLE	Those minerals which are disposed of under authority of the various mineral leasing acts. Minerals include coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur (in Louisiana and New Mexico), and geothermal steam.
MINERALS, LOCATABLE	Those minerals which are disposed of under the general mining laws. Included are minerals such as gold, silver, lead, zinc and copper which are not classed as leasable or salable.

MINIMUM MANAGEMENT REQUIREMENTS	Standards for resource protection, vegetative manipulation, silviculturist practices, even-aged management, riparian areas, soil and water and diversity, to be met in accomplishing National Forest System goals and objectives (see 36 CFR 219.27).
MINIMUM RESOURCE STANDARDS	Specific conditions of individual resources which must be maintained in order to meet minimum management requirements (36 CFR 219.27) and/or other legal requirements.
MINIMUM VIABLE	See Viable Population.
MINING CLAIMS	A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit. Includes lode claims, placer claims, mill sites and tunnel sites.
MITIGATE	To lessen the severity.
MITIGATION	Avoiding or minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact by preservation and maintenance operations during the life of the action.
MODIFICATION (VQO)	See Visual Quality Objective (VQO).
MONITORING AND EVALUATION	The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.
MONTANA WILDERNESS STUDY ACT AREAS	Those areas that are required to be studied for their wilderness suitability under the Montana Wilderness Study Act of 1977 (Public Law 95-150).
MOUNTAIN PINE BEETLE	A species of bark beetle that spends the major portion of their life cycle in a tree's cambium layer. Through a combination of the insect feeding on the cambium layer and the introduction of fungi which stop the resin flow, the tree is girdled and killed.
MULTIPLE USE	The management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

MWSA	Montana Wilderness Study Act.
MWSA AREAS	See Montana Wilderness Study Act Areas.
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)	An act which encourages productive and enjoyable harmony between man and his environment; promotes efforts to prevent or eliminate prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation; and establishes a Council on Environmental Quality.
NATIONAL FOREST LANDSCAPE MANAGMENT SYSTEM	The planning and design of the visual aspects of multiple use land management in such ways that the visual effects maintain or upgrade man's psychological welfare.
NATIONAL FOREST MANAGEMENT ACT (NFMA)	A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest plans and the preparation of regulations to guide that development.
NATIONAL FOREST SYSTEM	All National Forest lands reserved or withdrawn from the public domain of the United States, all National Forest lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under Title III.
NATIONAL RECREATION TRAILS	Trails designated by the Secretary of the Interior or the Secretary of Agriculture as part of the National system of trails authorized by the National Trails System Act. National recreation trails provide a variety of outdoor recreation uses.
NATIONAL REGISTER OF HISTORIC PLACES	A listing maintained by the National Park Service of areas which have been designated as being of historical significance. The Register includes places of local and State significance as well as those of value to the Nation as a whole.
NATIONAL WILD AND SCENIC RIVER SYSTEM	Rivers with outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.
NATIONAL WILDERNESS PRESERVATION SYSTEM	All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.
NDY	See Nondeclining Flow.
NONDECLINING YIELD	See Nondeclining Flow.

NEPA	See National Environmental Policy Act.
NFMA	See National Forest Management Act.
NET PUBLIC BENEFITS	An expression used to signify the overall long-term value to the Nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index. The maximization of net public benefits to be derived from management of units of the National Forest System is consistent with the principles of multiple use and sustained yield.
NO ACTION ALTERNATIVE	The management direction, activities, outputs, and effects most likely to exist in the future if the current plan would continue unchanged.
NON-INTER-CHANGEABLE COMPONENTS	Non-interchangeable Components (NICS) are defined increments of the suitable land base and their contribution to the allowable sale quantity (ASQ) that are established to meet Forest plan objectives. NICS are indentified as parcels of land and the type of timber thereon which are differentiated for the purpose of Forest plan implementation. The total ASQ is derived from the sum of the timber volumes from all NICS. The NICS cannot be substituted for each other in the timber sale program. Some conditions which may characterize a particular NIC are: (1) species marketability; (2) dead or live timber; (3) timber size class; and (4) operability.
NONCHARGEABLE VOLUME	All volume that is not included in the growth and yield projections for the selected management prescriptions used to arrive at the allowable sale quantity. It also includes all volume removed from nonsuitable lands.
NONCOMMODITY OUTPUTS	See Output, Nonmarket.
NONCONSUMPTIVE USE	Those uses of resources that do not reduce the supply. Nonconsumptive uses of water include hydroelectric power generation, boating, swimming, etc.
NONDECLINING FLOW	The principle that the quantity of timber planned for sale or harvest for any future decade must be equal to or greater than the planned sale and harvest for the preceding decade, and this planned sale and harvest for any decade is not greater than the long-term sustained yield capacity.
NONENERGY RESOURCES	See Minerals, Locatable.
NONEXTRACTIVE USE	Use which does not remove a resource from its natural setting.

NONGAME — Species of animals which are not managed as a sport hunting resource.

NONMARKET OUTPUT — See Output, Nonmarket.

NONMARKET VALUE — The unit price of a nonmarket ouput not normally exchanged in a market at any stage before consumption, and thus the input must be from other economic information.

NONPOINT SOURCE POLLUTION — Sources from which the pollutants discharged are: (1) induced by natural processes, including precipitation, seepage, percolation, and runoff; (2) not traceable to any discrete or identifiable facility and (3) better controlled through the utilization of Best Management Practices, including process and planning techniques. This includes natural pollution sources not directly or indirectly caused by man.

NONPRICED BENEFIT — See Output, Nonmarket.

NONSTOCKED — A stand of trees or aggregation of stands that have a stocking level below the minimum specified for meeting the prescribed management objectives.

NO-SURFACE OCCUPANCY STIPULATION — A mineral lease clause which, if attached to a mineral lease, prohibits the lessee from constructing roads, well pads or otherwise occupying the land surface unless, upon site-specific review, it is determined by the authorized officer that the requirements of the stipulation can be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.

OBJECTIVE — A concise time-specific statement of measurable planned results that respond to preestablished goals. An objective forms the basis for further planning, to define the precise steps to be taken and the resources to be used in achieving identified goals.

OBJECTIVE FUNCTION — A term used in linear programming describing the criteria to be optimized. Examples of objective functions are: maximize present net value, minimize cost or maximize timber.

OFF-ROAD VEHICLE — Any vehicle capable of being operated off an established road or trail, e.g., motorbikes, four-wheel drives, and snowmobiles.

OLD GROWTH — A forest stand with 15 trees per acre greater than 20 inches dbh (6 inches in lodgepole pine) and canopy closure that is 75 percent of site potential. The stand is uneven-age or multistoried. There should be 1.5 snags per acre greater than 6 inches dbh; 0.5 snags per acre greater than 20 inches dbh; and 25 tons per acre of down material greater than 6 inches diameter. Heart rot and broken tops are common and mosses and lichens are present.

OLD GROWTH TIMBER	See Overmature Timber and Old Growth.
OPPORTUNITY COST	An opportunity cost is value foregone. In this analysis it is a cost calculated as the difference between present net value of the alternative and the present net value of the maximum PNV increment.
OPTIMUM	The greatest level of production that is consistent with other resource requirements as constrained by environmental, social and economically sound conditions.
OUTPUT	A good, service, or on-site use that is produced from forest and rangeland resources. Definitions of Forest and rangeland output definitions, codes and units measure are contained in the Management Information Handbook (FSH 1309.11). Examples are: X06-Softwood Sawtimber Production - MBF; X80-Increased Water Yield - Acre Feet; W01-Primitive Recreation Use - RVD's.
OUTPUT, CONTROLLED	The amount of an output which management has the legal and practical ability to control with management activities.
OUTPUT, DIRECT	An output that fulfills specified objectives of the policy, program, or project being evaluated.
OUTPUT, INDUCED	A good, service, or on-site use which is incidental to the objectives of the resource activity. An example is the timber harvest activity which produces a primary output of board feet of timber and an induced output of acres of improved wildlife habitat because of the harvest activity.
OUTPUT, MARKET	A good, service, or on-site use that can be purchased at a price.
OUTPUT, NON-CONTROLLED	The amount of an output which will occur regardless of management activity.
OUTPUT, NONMARKET	A good, service, or on-site use not normally exchanged in a market.
OUTPUT, PRIMARY	A good, service, or on-site use that results from the completion of an activity, project or program that meets the specific objectives of the resource. Examples are board feet of timber, recreation visitor days, etc.
OVER-THE-COUNTER SALE	The selling of Forest products without bidding, as requested by the general public, usually for products such as fuelwood, corral poles, ornamental shrubs, etc.
OVERMATURE TIMBER	Individual trees or stands of trees that in general are past their maximum rate in terms of the physiological processes expressed as height, diameter and volume growth.

OVERSTORY	That uppermost canopy of the forest when there is more than one level of vegetation.
OVERTHRUST BELT	A complex geologic feature, extending from Alaska to Mexico, which resulted from compressional stresses within the earth, and which is characterized by abundant thrust faults. This zone passes through and includes all of western Montana.
PARTIAL RETENTION (VQO)	See Visual Quality Objective (VQO).
PARTICULATES	Small particles suspended in the air and generally considered pollutants.
PATENTED MINING CLAIMS	A patent is a document which conveys title to land. When patented, a mining claim becomes private property and is land over which the United States has no property rights, except as may be reserved in the patent. After a mining claim is patented, the owner does not have to comply with requirements of the General Mining Law or implementing regulations.
PERENNIAL STREAMS	Streams that flow continuously throughout most years.
PAYMENT IN LIEU OF TAXES	Payments to local or State governments based on ownership of Federal land and not directly dependent on production of outputs or receipt sharing. Specifically, they include payments made under the *Payments in Lieu of Taxes Act of 1976* by the U.S. Department of the Interior.
PERMITTED GRAZING	Use of a National Forest range allotment under the terms of a grazing permit.
PERSON YEAR (WORK YEAR)	A person year equals 2,087 hours of work time. A person year may be one person working yearlong or several persons filling seasonal positions.
PLAN OF OPERATIONS	A written plan describing mining and mineral processing activities that will likely cause a significant surface disturbance. The plan is prepared by those engaged in activities, such as prospecting, exploration or mining, in the National Forest. This plan must be approved by a Forest Officer.
PLANNING AREA	The area of the National Forest System covered by a regional guide or forest plan.
PLANNING CRITERIA	Standards, tests, rules, and guidelines by which the planning process is conducted and upon which judgments and decisions are based.

PLANNING HORIZON	The overall time period considered in the planning process that spans all activities covered in the analysis or plan and all future conditions and effects of proposed actions which would influence the planning decisions. In the National Forest planning process, this is 150 years.
PLANNING PERIOD	One decade. The time interval within the planning horizon that is used to show incremental changes in yields, costs, effects, and benefits.
PLANNING RECORDS	Documents and files that contain detailed information and decisions made in developing the Forest Plan. Available at the Forest Supervisor's Office.
PNV	See Present Net Value.
POLETIMBER TREES	Live trees of commercial species at least five inches in diameter at breast height but smaller than sawtimber size, and of good form and vigor.
POLICY	A guiding principle upon which is based a specific decision or set of decisions.
POTENTIALLY (TENTATIVELY) SUITABLE LAND	Forest land (as defined in CFR 219.3) for which technology is available that ensures timber production without irreversible resource damage to soils, productivity, or watershed conditions; for which there is reasonable assurance that such lands can be restocked (CFR 219.14); and which is available for timber management.
PRACTICE	See Management Practice.
PRECOMMERCIAL THINNING	The selective felling, deadening, or removal of trees in a young stand primarily to accelerate diameter increment on the remaining stems, maintain a specific stocking or stand density range, and improve the vigor and quality of the trees that remain.
PREDATOR	One that preys, destroys, or devours - usually an animal that lives by preying on other animals.
PREPARATORY CUT	Removal of trees near the end of a rotation so as to permanently open the canopy and enlarge the crowns of seed bearers, with a view to improving conditions for seed production and natural generation, as typically in shelterwood systems.
PRESCRIBED BURNING	The intentional application of fire to wildland fuels in either their natural or modified state under such conditions as allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further certain planned objectives (i.e., silviculture, wildlife management, etc.).

PRESCRIBED FIRE	A fire burning under specified conditions which will accomplish planned objectives in strict compliance with an approved plan and the conditions under which the burning takes place and the expected results are specific, predictable, and measurable.
PRESCRIPTION	See Management Prescription.
PRESENT NET VALUE (PNV)	The difference between the discounted value (benefits) of all outputs to which monetary value or established market prices are assigned and the total discounted costs of managing the planning area.
PRESENT NET WORTH	The discounted value of price times quantity less cost.
PRESERVATION (VQO)	See Visual Quality Objectives (VQO).
PRESUPPRESSION	Activities required in advance of fire occurrence to ensure effective suppression action. Includes (1) recruiting and training fire forces; (2) planning and organizing attack methods; (3) procuring and maintaining fire equipment; and (4) maintaining structural improvements necessary for the fire program.
PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY (PSD)	A classification established to preserve, protect, and enhance the air quality in National Wilderness Preservation System areas in existence prior to August 1977 and other areas of National significance, while ensuring economic growth can occur in a manner consistent with the preservation of existing clean air resources. Specific emission limitations and other measures, by class, are detailed in the Clean Air Act (42 U.S.C. 1875 et 15q.).
PRICED BENEFIT	See Output, Market.
PRICED OUTPUTS	Resource outputs that have market or assigned dollar values.
PRIMITIVE RECREATION SETTING	A classification of the recreation opportunity spectrum that that characterizes an essentially unmodified natural environment of a size or remoteness that provide significant opportunity for isolation from the signs and sounds of man and a feeling of vastness of scale. Visitors have opportunity to be part of the natural environment, encounter a high degree of challenge and use a maximum of outdoor skills but have minimum opportunity for social interaction.
PRIMITIVE ROADS	Roads that came into existence with little regard for grade or drainage control, or were abandoned facilities from some prior use. They are sometimes created merely by repeated driving over an area. Such roads are rarely, if ever, maintained and then only by users. These roads are single lane, usually with native surfacing, and sometimes passable with four-wheel drive vehicles only, especially in wet weather.

PRODUCTION	Extracting and transporting the recovered mineral resources from mine or field to mill, refinery or market. Facilities constructed in the development phase are utilized. Additional surface disturbance will usually be limited to waste disposal facilities, for example, tailing dams and ponds.
PRODUCTION POTENTIAL	The capability of the land or water to produce life-sustaining features (forage, cover, aquatics).
PRODUCTIVITY	See Site Productivity.
PROGRAM DEVELOPMENT AND BUDGETING	The process by which activities for the Forest are proposed and funded.
PROPOSED ACTION	In terms of the National Environmental Policy Act, the project, activity, or action that a Federal agency intends to implement or undertake and which is the subject of an environmental analysis.
PROSPECTING	The searching of an area which is thought to contain mineral resources. Investigative techniques such as geologic reconnaissance or mapping, geochemical sampling, photogeology, and geophysical prospecting are used. Economic resources cannot be identified but information is gained which indicates a greater or less probability of their being present. Surface disturbance is usually non-existent or negligible.
PRUNING	The removal of live or dead branches from standing trees.
PUBLIC ACCESS	Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use.
PUBLIC INVOLVEMENT	A Forest Service process designed to broaden the information base upon which agency decisions are made by (1) Informing the public about Forest Service activities, plans, and decisions, and (2) Encouraging public understanding about and participation in the planning processes which lead to final decision making.
PUBLIC ISSUE	A subject or question of widespread public interest relating to management of the National Forest System.
PUDDLING	Soil puddling is a physical change in soil properties due to shearing forces that destroy soil structure and reduce porosity. Detrimental puddling is observed as vehicle tracks when soil is molded and when depth of rutting has reached 6 inches or more in depth.
PURCHASER CREDITS	Credits timber purchasers receive applied toward the sale of timber in exchange for building the roads needed for access.

RANGE ALLOTMENT	A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.
RANGE, TRANSITORY	See Transitory Range.
RANGELAND	Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. It also includes areas species that are managed like native vegetation.
RANGER DISTRICT	Administrative subdivision of the Forest supervised by a District Ranger.
RARE II	See Roadless Area Review and Evaluation II.
REAL DOLLAR VALUE	A monetary value that compensates for the effects of inflation.
RECEIPT SHARES	The portion of receipts derived from Forest Service resource management that is distributed to state and county governments, such as the Forest Service 25 percent fund payments.
RECEIPTS	Money collected from timber stumpage, livestock grazing, campgrounds, special use permits, and oil and gas lease rentals and royalties, and returned to the federal treasury.
RECLAMATION	The process which may take place after mineral exploration, development, or production. The land is made suitable for other uses by reshaping, filling, seeding, fertilizing, and/or irrigating.
RECORD OF DECISION	A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action.
RECREATION CAPACITY	The number of people that can take advantage of a recreation opportunity at any one time without substantially diminishing the quality of the experience sought after.
RECREATION EXPERIENCE LEVEL	A concept used in recreation management to delineate the range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from "primitive" to "highly developed" is planned for the National Forest System.

RECREATION INFORMATION MANAGEMENT (RIM)	The Forest Service system for recording recreation facility condition and use.
RECREATION LIVESTOCK USE	The use of an area by animals, such as horses and mules, which are used primarily in conjunction with recreation activities.
RECREATION OPPORTUNITIES	The combination of recreation settings, activities, and experiences provided by the Forest.
RECREATION OPPORTUNITY GUIDE	A catalogue describing the recreation activities available on a particular Ranger District.
RECREATION OPPORTUNITY SPECTRUM (ROS)	A system for planning and managing recreation resources that that recognizes recreation activity opportunities, recreation settings, and recreation experiences along a spectrum or continuum.
RECREATION PREFERENCE TYPE (RPT)	A term used to indicate the types of recreation experiences sought after by Forest users. They are overlapping portions of the total recreation preferences spectrum that the public may express demands for. RPT I. Orientations toward using natural, unmodified environment for the appreciation and understanding of natural phenomena; as a source of intellectual and/or physical challenges; for seeking solitude; and for esthetic stimulations. RPT II. Orientations toward using natural or semiprimitive environment in searching for and extraction of indigenous fish and/or game species, rocks, minerals, edible plants, etc., and for enjoyment of the physical surroundings in which such extractable objects are found. RPT III. Orientations toward using semiprimitive, lightly developed areas for relaxing in natural surroundings; as a source of tranquility and freedom from tension; and for esthetic stimulation. RPT IV. Orientation toward using moderately developed areas and surrounding environment for intentional social interaction and group learning experiences. RPT V. Orientations toward using highly developed areas for social interactions with many other people and for pursuits which allow for the expression of learned physical abilities.
RECREATION RESIDENCE	A house or cabin on National Forest land for seasonal recreational use that is not the primary residence of the owner.

RECREATION TYPES

Developed Recreation - The type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

Dispersed Recreation - That type of recreation use related to and in conjunction with roads and trails that requires few if any improvements and may occur over a wide area. Activities tend to be day-use oriented and include hunting, fishing, berrypicking, off-road vehicle use, hiking, horseback riding, picnicking, camping, viewing scenery, snowmobiling, and many others.

RECREATION VISITOR DAY (RVD)

One visitor day equals 12 hours (one person for 12 hours, or 12 people for 1 hour, or any combination thereof).

REDUCED SERVICE MANAGEMENT

The administration, operation and maintenance of developed recreation sites to established standards with the objective to meet minimum health and safety needs of the visitor and keep the site open to public use.

REFORESTATION

The renewal of forest cover by seeding, planting, and natural means.

REGENERATION

The renewal of a tree crop, whether by natural or artificial means. This term may also refer to the crop itself.

REGIONAL FORESTER

The official responsible for administering a single Region of the Forest Service.

REGIONAL GUIDE

A document developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all natural resource management activities and established management standards and guidelines for National Forest System lands of a given Region to the Forests within a given Region. It also disaggregates the RPA objectives assigned to the Region to the Forests within that Region.

REGULATED

The commercial forest land that is organized for timber production under the principle of sustained yield. The harvest of timber from this land is regulated to achieve multiple long range objectives, such as maintaining setting for recreational activities, rotating forage production areas and wildlife habitat, increasing water production yield, and increasing the growth and utilization of timber for the Nation's supply.

REGULATIONS

Refers to the Code of Federal Regulations for implementing the National Forest Management Act, 36 CFR, Part 219.

RENEWABLE RESOURCES	Resources that are possible to use indefinitely, when the use rate does not exceed the ability to renew the supply. However, in the RPA program, the term is used to describe those matters within the scope of responsibilities and authorities of the Forest Service as required by the Forest and Rangeland Renewable Resources Planning Act of 1974. Consequently, the renewable resources include: timber, range, minerals, wildlife and fish, water, recreation, and wilderness.
RENEWABLE RESOURCES ASSESSMENT	An appraisal of the Nation's renewable resources that recognizes their vital importance and the necessity for long-term planning and associated program development. The Assessment meets the requirements of Section 3 of the Forest and Rangeland Renewable Resources Planning Act and includes analysis of present and anticipated uses, demands, and supplies of the renewable resources; a description of Forest Service programs and responsibilities; and a discussion of policy considerations, laws, and regulations.
RENEWABLE RESOURCES PROGRAM	The program for management and administration of the National Forest Service System, for Research, for Cooperative State and Private Forest Service programs, and for conduct of other Forest Service activities in accordance with Section 4 of the Forest and Rangeland Renewable Resources Planning Act.
RESOURCE ALLOCATION MODEL	A mathematical model using linear programing which will assign prescriptions to land areas and schedule implementation of those prescriptions simultaneously. The end purpose of the model is to find a schedule and prescription assignment that meets the goals of the Forest and optimizes some objective function such as "maximize PNV".
RESOURCE ELEMENT	A collection of activities from the various operating programs required to accomplish the Forest Service mission and which fulfill statutory or Executive requirements. There are seven resource elements: Recreation, Wilderness, Wildlife and Fish, Range, Timber, Water, and Minerals.
RESEARCH NATURAL AREA	An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and acquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.
RETENTION (VQO)	See Visual Quality Objectives (VQO).
RETURNS	Undiscounted value of dollar receipts to the Federal Government, including timber stumpage receipts, grazing fees, and recreation fees.

RIGHT-OF-WAY — Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project facility passing over, upon, under, or through such land.

RIM — See Recreation Information Management.

RIP — Vegetative working group symbol for the habitat types that occur in riparian areas.

RIPARIAN AREAS — Areas with distinctive resource values and characteristics that are comprised of an aquatic ecosystem and adjacent upland areas that have direct relationships with the aquatic system. This includes floodplains, wetlands, and all areas within a horizontal distance of approximately 100 feet from the normal high water line of a stream channel, or from the shoreline of a standing body of water.

RIPARIAN ECOSYSTEM — A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. It is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.

RNA — See Research Natural Areas.

ROAD CREDITS — Credits earned by timber purchasers and which are applied toward the sale price of timber in exchange for building the roads needed for access.

ROAD MAINTENANCE LEVELS — Road maintenance levels are as follows:

Level 1: Basic custodial care as required to protect the road investment and to see that damage to adjacent land and resources is held to a minimum. The road is not normally open to traffic.

Level 2: Same basic maintenance as Level 1 plus logging out, brushing out, and restoring the road prism as necessary to provide passage. Route markers and regulation signs are in place and useable. Road is open for limited passage of traffic, which is usually administrative use, permitted use, and/or specialized traffic.

Level 3: Road is maintained for safe and moderately convenient travel suitable for passenger cars. Road is open for public travel, but has low traffic volumes except during short periods of time (e.g. hunting season).

Level 4: At this level, more consideration is given to the comfort of the user. Road is usually surfaced with aggregate or is paved and is open for public travel.

Level 5: Safety and comfort are important considerations for these roads which are open to public traffic and generally receive fairly heavy use (100 Average Daily Traffic or more). Roads have an aggregate surface or are paved.

ROAD MANAGEMENT	The combination of both traffic and maintenance management operations. Traffic management is the continuous process of analyzing, controlling and regulating uses to accomplish National Forest objectives. Maintenance management is the perpetuation of the transportation facility to serve intended management objectives.
ROADED NATURAL RECREATION SETTING	A classification on the recreation opportunity spectrum where timber harvest or other surface use practices are evident. Motorized vehicles are permitted on all or parts of the road system.
ROADLESS AREA	A National Forest area which (1) is larger than 5000 acres or, if smaller than 5000 acres, contiguous to a designated wilderness or primitive area; (2) contains no roads and (3) has been inventoried by the Forest Service for possible inclusion in the wilderness preservation system.
ROADLESS AREA REVIEW AND EVALUATION (RARE) II	A comprehensive process, instituted in June 1977, to identify roadless and undeveloped land areas in the National Forest System and to develop alternatives for both wilderness and other resource management.
ROS	See Recreation Opportunity Spectrum.
ROTATION	The planned number of years between the formation or generation of trees and their harvest at a specified stage of maturity.
ROUNDWOOD	The volume of logs or other round products required to produce lumber, plywood, woodpulp, paper, or other similar products.
RPA	See Forest and Rangeland Renewable Resources Planning Act of 1974
RPA PROGRAM	The recommended national direction for long-range management of renewable resources on National Forest System lands.
RURAL RECREATION SETTING	A classification on the recreation opportunity spectrum that is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high.
RVD	See Recreation Visitor Day.
S40M60	Symbol for landtype group; moderate to nonsensitive soils on slopes over 60 percent and sensitive soils on 40 to 60 percent slopes.
SS+60	Symbol for landtype group; sensitive soils on slopes over 60 percent.

SALE SCHEDULE	The quantity of timber planned for sale by time period from an area of suitable land covered by a forest plan. The first period, usually a decade, of selected sale schedule provides the allowable sale quantity. Future periods are shown to establish that long-term sustained yield will be achieved and maintained.
SALVAGE HARVEST	The cutting of trees that are dead, dying, or deteriorating (e.g., because they are overmature or materially damaged by fire, wind, insects, fungi, or other injurious agencies) before they lose their commercial value as sawtimber.
SANITATION HARVEST	The removal of dead, damaged, or susceptible trees, essentially to prevent the spread of pests or pathogens and so promote forest hygiene.
SAWTIMBER	Trees containing at least one 8-foot piece with a 5.6 inch diameter inside bark at the small end and meeting the Regional specification for freedom from defect. Softwood trees must be at least 8 inches in diameter at breast height for all species except lodgepole pine which will be 7 inches at breast height.
SCENIC EASEMENT	A legal interest in the land of another which allows the easement holder specified uses or rights without actual ownership of the land; in this case, control of the use of land adjacent to public highways, parks, and rivers. It may provide something attractive to look at within the easement area, an open area to look through to see something attractive beyond the easement itself, or a screen to block out an unsightly view beyond the easement area.
SCOPING PROCESS	An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and deemphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly. (Ref. CEQ regulations, 40 CFR 1501.7).
SEDIMENT	Solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.
SEED TREE CUTTING	The removal in one cut of most of the mature trees from an area, leaving only a small number of desirable trees to provide seed for regeneration.
SEEDLING/ SAPLING	A size category for forest stands in which trees less than 5 inches in diameter are the predominant vegetation.

SEISMIC EXPLORATION

Seismic exploration is used to map underground geological features to obtain information on the earth's subsurface and to locate areas where accumulations of oil and gas might occur.

Seismic waves, generated at or near the surface, penetrate the earth's crust and reflect from subsurface rock layers back to the surface. The geophysicist receives a printed record or seismograph from which is measured the depth to various strata and from which subsurface structures with a potential for oil and gas accumulation can be determined such as faults, anticlines, and folds.

Portable - Where access limitations, topography, or other restraints prevent use of trucks, portable operations can be performed. Two portable techniques exist for collecting data.

These are:

(1) Surface charge programs involve the detonation of a series of as much as 50 to 100 pounds of explosives at shot points located at intervals along the seismic line. Surface charges can be placed directly on the ground, on snow, or on a variety of stakes or platforms. All necessary equipment to conduct the operation is transported by helicopters and then conveyed by foot travel.

(2) Various kinds of portable drills can be backpacked or delivered by helicopter to the area. A shallow subsurface portable program would involve drilling a pattern of approximately 16 holes about 4 inches in diameter up to 50 feet deep per mile of line. At this depth, a 10 to 40 pound charge of explosive is placed and detonated. Recording cables and geophones are laid out by foot travel.

With both of these portable techniques, shock waves generated by detonation are received and transmitted via geophones and cable to a recording device. Portable methods are generally used on the Forest.

Conventional - The conventional method of collecting seismic data includes the use of truck-mounted drills and vehicle-supported crews and generally involves off-road travel. This technique involves drilling 5 to 18 5-inch diameter holes per mile to a depth of 180 to 200 feet. At this depth, a 10 to 100 pound explosive charge is placed and detonated. Shock waves are received and transmitted via geophones and cable to a truck-mounted recording device. Due to terrain restrictions, this method has limited application on the Forest.

Vibroseis - The vibroseis technique involves using truck-mounted hydraulic pads which generate energy waves through vibration rather than explosives. The vibrator method typically consists of four large trucks each equipped with a vibrator (a steel slab weighing about three tons) mounted between the front and back wheels. The vibrator pads (about 4 feet square) are lowered to the ground and vibrators on all trucks are triggered electronically from the recorder truck. Energy waves are received and transmitted via cable and geophones to a recorder truck. After the information is recorded, the trucks move forward a short distance and the process is repeated. The vibroseis operation is usually limited to roads and gentle terrain.

SELECTION CUTTING — The annual or periodic removal of trees as part of an uneven-age silvicultural system. Cutting can involve individual trees or small groups of trees to meet a predetermined goal of size and species composition in the remaining stand.

SEMIPRIMITIVE RECREATION SETTING — A classification on the recreation opportunity spectrum that characterizes a predominately natural or natural appearing environment of a moderate to large size. Concentration of users is low, but there is often evidence of other area users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but are subtle.

SENSITIVE SPECIES — Those plant or animal species which are susceptible or vulnerable to activity impacts or habitat alterations.

SEQUENTIAL BOUNDS — A set of constraints used in linear program models to establish the relationship of the quantity of an output to preceding and succeeding quantities of that output (e.g. the forage production in one time period cannot increase or decrease over ten percent from the forage production of the previous time period).

SERAL — A biotic community which is developmental; a transitory stage in an ecologic succession.

SEVERELY BURNED SOILS — Soils are severely burned when the top layer of mineral soil has been significantly changed in color, usually to red, and the next one-half inch blackened from organic matter charring by heat through the top layer.

SHELTERWOOD CUTTING — The removal of a stand of trees through a series of cuttings designed to establish a new crop with seed and protection provided by a portion of the stand.

SIDE CAST — Road construction where the excavated soil is deposited on the downhill side.

SILVICULTURAL EXAMINATION — The process used to gather the detailed in-place field data needed to determine management opportunities and direction for the timber resource within a small subdivision of a forest area such as a stand.

SILVICULTURAL SYSTEMS	A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the fellings that remove the mature crop and provide for regeneration and according to the type of forest thereby produced.
SITE PREPARATION	A general term for a variety of activities that remove competing vegetation, slash, and other debris that may inhibit the reforestation effort.
SITE PRODUCTIVITY	Production capability of specific areas of land.
SLASH	The residue left on the ground after felling and other silvicultural operations and/or accumulating there as a result of storm, fire, girdling, or poisoning of trees.
SLOUGH WIDENING	Additional road widening to allow for loss of soil on the downhill side.
SMALL GAME	Birds and small mammals normally hunted or trapped.
SNAG	A standing dead tree usually greater than 5 feet in height and 6 inches in diameter at breast height.
SOCIAL ORGANIZATION	The structure of a society described in terms of institutions, community cohesion, and community stability.
SOCIAL VARIABLE	A variable that measures the social impact of Forest Service management alternatives. Examples include population statistics, types of institutions, and personal opinion as reflected in attitudes or as demonstrated by behavior.
SOIL PRODUCTIVITY	The capacity of a soil to produce a specific crop such as fiber and forage, under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season.
SPECIAL-USE PERMIT	A permit issued under established laws and regulations to an individual, organization, or company for occupancy or use of National Forest land for some special purpose.
STAGNATION	A condition where plant growth is markedly reduced or even arrested through, e.g., competition, state of the soil, or disease.
STAND	A community of trees or other vegetative growth occupying a specific area and sufficiently uniform in composition (species), age, spatial arrangement, and conditions as to be distinguishable from the other growth on adjoining lands, so forming a silvicultural or management entity.

STANDARD AND GUIDELINE — An indication or outline of policy or conduct.

STIPULATIONS — Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all Federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

STOCKING — A measure of timber stand density as it relates to the optium or desired density to achieve a given management objective.

STREAM ORDER — A measure of the position of a stream in the hierarchy of tributaries. (Stream as referenced here refers to perenniel streams.)

First-order streams are unbranched streams, that is they have no tributaries.

Second-order streams are formed by the confluence of two or more first-order streams. They are considered second-order until they join another second-order or larger stream.

Third-order streams are formed by the confluence of two or more second-order streams. They are considered third-order until they join another third-order or larger stream.

SUBDIVISIONS — Areas of previously undeveloped land divided into individual homesites and/or blocks of lots with streets or roads and open spaces.

SUCCESSIONAL STAGE — A phase in the gradual supplanting of one community of plants by another.

SUITABILITY — The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

SUITABILITY ANALYSIS — Process of identifying National Forest lands to be managed for timber production. Stage I identifies the biologically capable, administratively available, and technically suitable lands. Stage II consists of an economic analysis of costs and benefits of timber management on the lands identified in Stage 1. Stage III provides the final assignment of suitable lands based on Forest objectives and economic efficiency.

SUITABLE FOREST LAND	Forest land (as defined in CFR 219.3) for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions; for which there is reasonable assurance that such lands can be adequately restocked (as provided in CFR 219.14); and for which there is management direction that indicates that timber production is an appropriate use of that area.
SUITABLE TIMBERLAND	See Suitable Forest Land.
SUPPLY	The amount of an output that producers are willing to provide at a specific price, time period, and conditions of sale.
SUPPORT ELEMENT	A collection of major Forest Service activities which complement the resource elements. There are five support elements: Protection, Lands, Soils, Facilities and Rural Community and Human Resources.
SUPPRESSION (FIRE SUPPRESSION)	Any act taken to slow, stop, or extinguish a fire. Examples of suppression activities include fireline construction, backfiring and application of water or chemical fire retardants.
SYSTEM ROADS	See Forest System Road.
TARGET	A quantifiable output assigned to the Forest.
TEMPORARY ROAD	Those roads needed only for the purchaser or permittee's use. The Forest Service and the purchaser or permittee must agree to the location and clearing widths. Temporary roads are used for a single, short-term use, e.g. to haul timber from landings to Forest development roads, access to build water developments, etc.
TENTATIVELY SUITABLE TIMBERLAND	See Potentially Suitable Land.
THERMAL COVER	Cover used by animals to ameliorate chilling effects of weather; for elk, a stand of coniferous trees 40 feet or taller with an average crown closure of 70 percent or more.
THINNING	An intermediate cutting made to maintain acceptable growth rates of remaining trees.
THREATENED & ENDANGERED SPECIES	Any species, plant or animal, which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its' range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

THREE-STEP SHELTERWOOD	An even-aged silvicultural system in which the old crop (the shelterwood) is removed in three successive cuttings in order to provide a source of seed and/or protection for regeneration.
TIERING	Refers to the elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmental impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.
TIMBER	A general term for the major woody growth of vegetation in a forest area.
TIMBER BASE	The lands within the Forest that are suitable for timber production.
TIMBER PRODUCTION	The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. For purposes of this subpart, the term "timber production" does not include production of fuelwood.
TIMBER STAND IMPROVEMENT (TSI)	All noncommercial intermediate cuttings and other treatments to improve composition, condition, and volume growth of a timber stand.
TRAILHEAD	The parking, signing, and other facilities available at the terminus of a trail.
TRANSITORY RANGE	Land that is suitable for grazing use for a period of time. For example, on particular disturbed lands, grass may cover the area for a period of time before being replaced by trees or shrubs not suitable for forage.
TREE OPENING	An opening in the Forest cover created by the application of even-aged silvicultural practices. The Northern Regional Guide established size limitations and guidelines to determine when cut areas are no longer considered openings.
TRESPASS	The act of going on another's land or property unlawfully.
TWO-STEP SHELTERWOOD	An even-aged silvicultural system in which the old crop (shelterwood) is removed in two successive cuttings in order to provide a source of seed and/or protection for regeneration.
UNDERBURNING	Burning fuels under a forest canopy.
UNDERSTORY	The trees and other woody species which grow under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

UNEVEN-AGED MANAGEMENT — The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection.

Individual Tree Selection Cutting - The removal of selected trees from specified size and age classes over the entire stand area in order to meet a predetermined goal of size or age distribution and species composition in the remaining stand.

Group Selection Cutting - The removal of small groups of trees to meet a predetermined goal of size distribution and species in the remaining stand.

UNREGULATED HARVEST — This harvest is not charged against the allowable sale quantity. It includes occasional volumes removed that were not recognized in calculations of the allowable sale quantity, such as cull or dead material and noncommercial species and products. It also includes all volume removed from unsuitable areas. Harvests from unsuitable areas will be programmed as needed to meet multiple use objectives other than timber production and for improvement of administrative sites.

UNSUITABLE TIMBERLAND — Lands not selected for timber production in Step II and III of the suitablility analysis during the development of the Forest Plan due to (1) the multiple-use objectives for the alternative preclude timber production, (2) other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met and (3) the lands are not cost-efficient over the planning horizon in meeting forest objectives that include timber production. Land not appropriate for timber production shall be designated as unsuitable in the Forest Plan.

UTILITY CORRIDOR — See Corridor

UTILIZATION STANDARDS — Standards guiding the use and removal of timber. They are measured in terms of diameter at breast height (d.b.h.) and top of the tree inside the bark (top d.i.b.) and the percentages of "soundness" of the wood.

VALUE, MARKET — The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

VALUE, NONMARKET	The unit price of an output not normally exchanged in a market after at least one stage before consumption, and thus must be imputed from other economic information.
VEGETATION TREATMENT	Any activities undertaken to modify the existing condition of the vegetation.
VIABLE POPULATION	A population which has adequate numbers and dispersion of reproductive individuals to ensure the continued existence of the species population in the planning area.
VISITOR INFORMATION SERVICE (VIS) SITE	A site which provides interpretative information, (directional, historical, statistical) located at Forest historical sites, overlook sites, or special interest areas.
VISUAL MANAGEMENT SYSTEM	Forest Service system for identifying visual characteristics of the landscape and analyzing potential visual effects of resource management actions.
VISUAL QUALITY OBJECTIVE (VQO)	A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape. Preservation: In general, human activities are not detectable to the visitor. Retention: Human activities are not evident to the casual Forest visitor. Partial Retention: Human activities may be evident, but must remain subordinate to the characteristic landscape. Modification: Human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in middle-ground or background. Maximum Modification: Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background. Enhancement: A short-term management alternative which is done with the express purpose of increasing positive visual variety where little variety now exists.
VISUAL RESOURCE	The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.
VQO	See Visual Quality Objective.

WALLOW — A depression, pool of water, or wet area produced or utilized by elk or moose during the breeding season.

WATER YIELD — The measured output of the Forest's streams.

WATER YIELD INCREASE — Additional water released to the Forest streams as a result of Forest management activities.

WEEDING — Generally a cultural operation eliminating or suppressing undisturbed vegetation, mainly herbaceous, during the seedling stage of a forest crop, thus reducing competition with the seedling stand.

WET AREAS — Sites, often occurring at the heads of drainages, such as wet sedge meadows, bogs, or seeps. They are often referred to as "moist sites" and are very important components of elk summer range. Sites near water are important because the forage they produce is highly nutritious and heavily utilized by elk.

WETLANDS — Those areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

WILDERNESS — Federal land retaining its primeval character and influence without permanent improvements or human habitation as defined under the 1964 Wilderness Act. It is protected and managed so as to preserve its natural conditions which (1) generally appear to have been affected primarily by forces of nature with the imprint of man's activity substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and confined type of recreation; (3) has at least 5,000 acres or is of sufficient size to make practical its preservation, enjoyment, and use in an unimpaired condition, and (4) may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.

WILDERNESS ATTRIBUTE — One of four attributes required or mentioned in the Wilderness Act, i.e. natural integrity, apparent naturalness, outstanding opportunity for solitude, and primitive recreation. Supplemental attributes are outstanding ecological, geological, scenic, and historical features.

WILDERNESS STUDY — An analysis to determine an area's appropriateness, cost, and benefits for addition to the National Wilderness Preservation System.

WINDOWS — Usually short, narrow passageways through constrained areas which are the most feasible potential locations for utility corridor facilities. Examples include mountain passes, restricted passages between exclusions and or avoidance areas.

WINTER RANGE	See Big Game Winter Range.
WITHDRAWAL	An order removing specific land areas from availability for certain uses.
WORK YEAR EQUIVALENTS	This is 2,087 working hours. May be accomplished by one person working yearlong or several people filling seasonal positions.
YARDING	The operation of hauling timber from the stump to a collecting point.
ZONE OF INFLUENCE	A delineated geographic area within which the present and proposed actions exert an important influence on residents and visitors.

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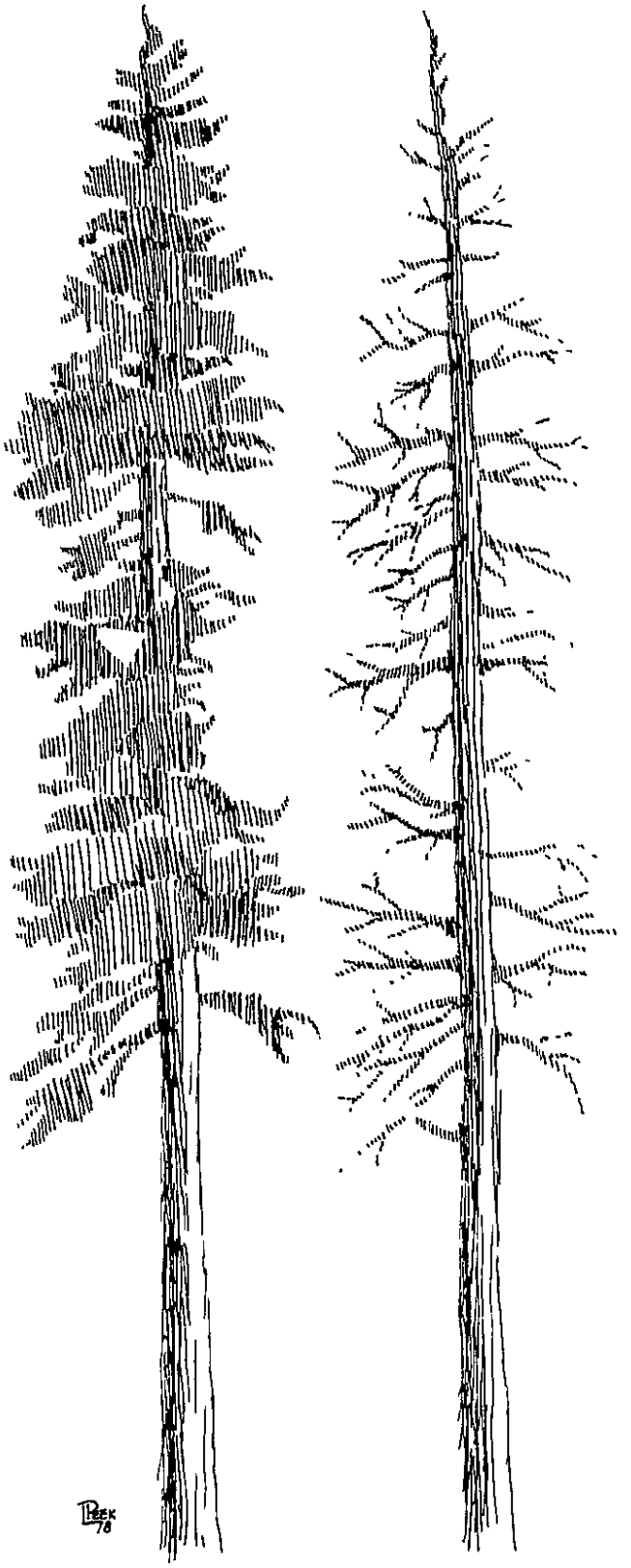
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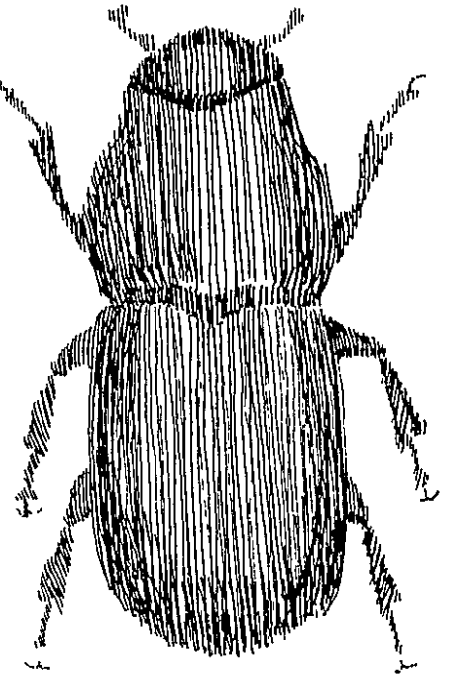

APPENDIX A

LAND CLASSIFICATION SUMMARY

Classification	Acres
1. Nonforest land (includes water)	354,713
2. Forest land	1,223,170
3. Forest land withdrawn from timber production	457,408
4. Forest land not capable of producing crops of industrial wood	0
5. Forest land physically unsuitable	
Irreversible damage likely to occur	0
Not restockable within 5 years	34,533
6. Forest land - inadequate information 1/	144,897
7. Tentatively suitable forest land (item 2 minus items 3, 4, 5, and 6)	586,332
8. Forest land not appropriate for timber production 2/	
Multiple Use Objectives	
Wilderness	24,700
Semiprimitive recreation and elk security	137,346
Minimum Management Requirements	5,870
Economic Efficiency	28,596
Total	196,512
9. Unsuitable forest land (items 3, 4, 5, 6, and 8)	833,350
10. Total suitable forest land (item 2 minus item 9)	389,820
11. Total National Forest land (items 1 and 2)	1,577,883

1/ Lands for which current information is inadequate to project responses to timber management. Usually applies to low site quality lands.

2/ Lands identified as not appropriate for timber production due to:
(a) assignment to other resource uses to meet Forest Plan objectives;
(b) management requirements, and (c) not being cost efficient in meeting Forest Plan objectives over the planning horizon.

APPENDIX B

VEGETATION MANAGEMENT PRACTICES

Silvicultural Practices

The vegetative management practices discussed in Table B-1 provide guidance to certified silviculturists prescribing management activities. This information will be used in conjunction with other site specific factors including land type, soils, climate, and existing vegetation; pertinent scientific and technical literature; and professional experience to develop appropriate silvicultural prescriptions.

The silvicultural prescription process is conducted concurrent with the interdisciplinary environmental analysis process. Prescriptions are formulated within the Forest Plan goals, objectives and standards to achieve specific management area objectives. Vegetative management practices or silvicultural prescriptions considered for use range from individual tree selection to clearcut. The vegetative management practices selected for a specific site will comply with management requirements listed in 36 CFR 219.27(b). Where clearcutting is the vegetative management practice selected, it will be the optimal system.

The guidelines in Table B-1 are supplemental to those in The Northern Regional Guide and are applicable to all management areas described in the Forest Plan. They are organized by habitat type groups which correspond to the working groups used in the Forest Plan. The rationale for implementing various vegetative management practices is included.

Table B-1
Practices by Vegetative Type

Vegetative Type: FORPLAN Working Group	Vegetative Type: Habitat Type Group	Vegetative Type: Habitat Type*	Vegetative Management Practice	Application of Practices
HT123	1-warm, dry, low elev , south slope	Scree PP/Agsp PP/Feid PP/Putr PP/Syal	Salvage, Sanitation, & Selection	*Uneven-age systems, including individual tree and group* selection, salvage, and sanitation are acceptable silvicultural practices to meet management objectives
		DF/Agsp DF/Feid	Salvage, Sanitation, Shelterwood, Selection, and Clearcut	Preferred silvicultural systems are the even-age shelterwood amd uneven-age selection systems The uneven-age individual tree selection system is preferred in climax stands of ponderosa pine where a continuous tree cover is needed to meet regeneration and resource objectives and where mountain pine beetles are not a problem The even-age shelterwood system with planting is preferred on sites supporting ponderosa pine and Douglas-fir unless dwarf mistletoe infections are heavy Small clearcuts are optimum where there are heavy infestations of dwarf mistletoe and where there are no desirable leave trees and where slopes, logging systems, slash disposal, and site preparation prevent the protection of leave trees Planting will be prescribed in some cases to assure proper species mixture and prompt regeneration
HT123	2-mod warm, dry, mod elev , all aspects	DF/Vaca DF/Phma DF/Syal DF/Caru DF/Caru-Aruv	Shelterwood, Clearcut, Seed Tree, Commercial and Pre-commercial Thinning, and Planting	The shelterwood system is preferred on moderate and moist sites supporting ponderosa pine and/or Douglas-fir except where dwarf mistletoe, bark beetles, site preparation, logging, fuels and slope problems prevent leave tree protection Clearcutting and planting is optimum where there are no suitable leave trees, where leave trees can't be protected *from logging, slash disposal and site preparation activities* and where there are serious insect and disease problems Seed tree cutting is appropriate on moist sites where natural regeneration is possible , shade is not required and other management objectives can be met *Precommercial and commercial thinning are prescribed to* accomplish insect and disease objectives and improve the growth of crop trees Planting will be prescribed in most cases to assure regeneration in 5 years and the proper species mixture *Uneven-age systems are usually not biologically sound in* these habitat types because western spruce budworm and dwarf mistletoe infest severely reduce the growth of and kill Douglas-fir regeneration Ponderosa pine is intolerant to the shade which results from uneven-age *management*
	3-mod cool, dry, mod elev	DF/Vagl GF/Xete	Clearcut, Shelterwood, Commercial and Pre-commercial Thinning, and Planting	DF/Vagl and GF/Xete generally support lodgepole pine stands *Clearcutting is the optimum silviculture system in most* lodgepole pine stands due to the incidence of dwarf mistletoe susceptibility to mountain pine beetle and wind throw, and old growth stand conditions The shelterwood system is preferred where there are suitable ponderosa pine and Douglas-fir leave trees, minimal problems with dwarf mistletoe and steep slopes, and leave trees can be protected from logging, fuel reduction and site preparation activities Precommercial and commercial thinning are prescribed to accomplish insect and disease objectives and improve crop tree growth Planting will be prescribed in some cases to assure regeneration in 5 years, however, most lodgepole stands will be regenerated naturally Uneven-age systems are generally not biologically sound in these types because of dwarf mistletoe problems and because lodgepole pine is not shade tolerant The group selection system is possible on some sites where dwarf mistletoe and mountain pine beetle problems are minimal and other resource objectives require continuous forest cover

* Pfister, et al 1977

Table B-1 (continued)
Practices by Vegetative Type

Vegetative Type			Vegetative Management Practice	Application of Practices
FORPLAN Working Group	Habitat Type Group	Habitat Type		
HT4	4-cool, mod dry, elev 5000 to 6800 ft	AF/Xete	Clearcut, Commercial and Pre-commercial Thinning, and Planting	The clearcut silvicultural system is optimum in the AF/Xete habitat type which supports mostly lodgepole pine Precommercial and commercial thinning are prescribed in lodgepole pine to reduce the long-term hazard of wildfire, accomplish insect and disease objectives, and improve the growth of crop trees Planting will be prescribed where natural regeneration can't be assured in 5 years Dwarf mistletoe, mountain pine beetle, and wind throw problems prevent biologically sound application of the shelterwood system Uneven-age systems are generally not biologically sound in this type because of dwarf mistletoe problems and because lodgepole pine is not shade tolerant The group selection system is possible on some sites where dwarf mistletoe and mountain pine beetle problems are minimal and other resource objectives require continuous forest cover
HT567 and RIP	5-mod cool, moist 6-cool, moist to wet 7-cool, moist to wet, stream bottoms	DF/Libo S/Libo GF/Clun AF/Clun AF/Libo AF/Mefe AF/Gatr	Clearcut, Shelterwood, Seed Tree, Selection, Commercial and Pre-commercial Thinning, and Planting	The clearcut system is optimum in old growth stands of lodgepole pine, western larch, Douglas-fir, spruce and fir which have insect and disease problems or leave trees can't be protected due to slope, logging system, slash disposal site preparation and a high water table The shelterwood system is preferred in mixed conifer stands supporting Douglas-fir, ponderosa pine and western larch suitable for leave trees, where insect and disease problems are minimal, and where some natural regeneration is desirable Seed tree cutting can be applied in place of shelterwood cutting where natural regeneration but not shade is required The selection system is acceptable where management goals desire continuous forest conditions, existing stand conditions permit and it is silviculturally sound Some riparian stands in the AF/Clun and AF/Gatr habitat types are suited to uneven-age management by the individual tree or group selection systems Precommercial and commercial thinning are prescribed to reduce the long-term hazard of wildfire in lodgepole pine stands, accomplish insect and disease objectives, and improve the growth of crop trees Planting or partial planting will be prescribed in most stands to assure proper species mixture and prompt regeneration
NCSUBA	8-cold mod dry to wet	AF/Vasc AF/Luhi WBP-AF AL-AF	Salvage, Clearcut, and Selection	Uneven-age systems, including individual tree and group selection, salvage and clearcutting are acceptable silvicultural practices to meet management objectives

Reference The Northern Region Guide (USDA, 1983) and "Silvicultural Systems for the Major Forest Types of the United States", USDA, Forest Service, Agricultural Handbook No 445

APPENDIX C

TIMBER PRODUCTIVITY CLASSIFICATION

Potential Growth (cubic feet/ acre/year)	Suitable Lands 1/ (acres)	Unsuitable Lands 2/ (acres)
Less than 20	0	278,141
20-49	90,028	272,974
50-84	299,792	282,235
85-119	0	0
120-164	0	0
165-224	0	0
225+	0	0
Total	389,820	833,350

1/ Based on the potential biological growth of natural stands, with no consideration given to stocking control or other intensive management practices.

2/ Productivity of wilderness portion is based on photo interpretation and on-the-ground vegetative habitat typing.