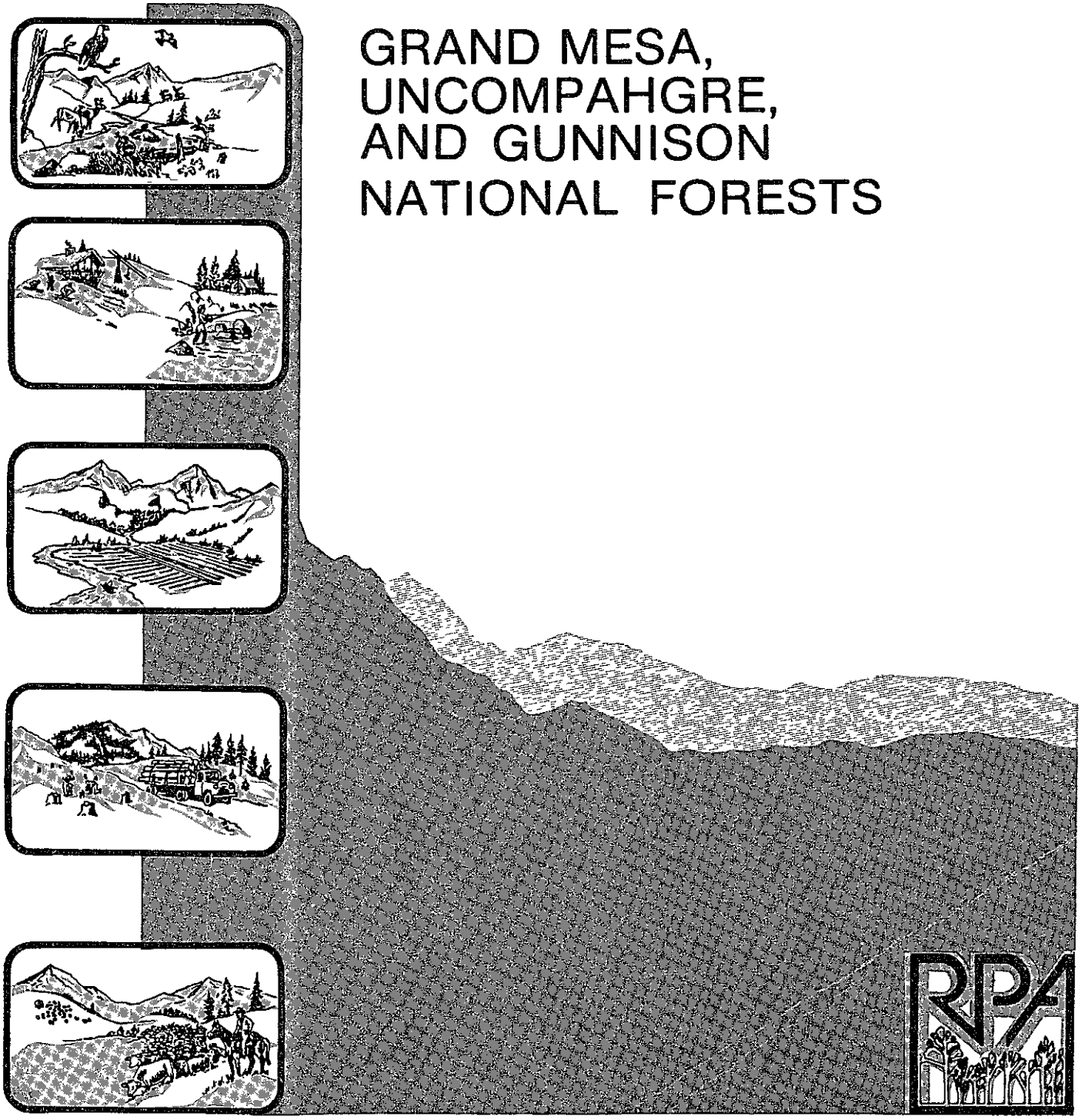
United States
Department of
Agriculture

Forest Service

Delta, Colorado

LAND AND RESOURCE MANAGEMENT PLAN

GRAND MESA, UNCOMPAHGRE, AND GUNNISON NATIONAL FORESTS



Grand Mesa, Uncompahgre, and Gunnison National Forests

LAND AND RESOURCE MANAGEMENT PLAN

Rocky Mountain Region
USDA, Forest Service

PREFACE

PURPOSE OF THE PLAN

The purpose of a Forest Land and Resource Management Plan (the Plan) is to address local, regional, and national issues related to National Forest management; to define a mix of management activities that will promote the sustained use and protection of forest resources; guides development of multi-year implementation programs for the Supervisor's Office and Ranger Districts; and provides direction to the Supervisor's Office and Ranger Districts for identifying activities and expenditures to achieve on-the-ground results. The Plan is needed to address the conflicting desires between forest user groups. There is a need to resolve these conflicts, and to update and display information in one Plan that integrates management direction for all forest resources. The Plan provides a management program reflecting a mix of management activities to achieve a healthy, vigorous forest environment. The environment must be capable of supporting a wide range of natural processes and human activities. Vegetation treatment is the major tool the Forest utilizes to achieve this overall goal. The Plan will also satisfy guiding legislation. To accomplish this the Plan will:

--Establish management direction and associated long-range goals and objectives for the Forest, for the next 50 years.

--Specify the standards, guidelines, approximate timing, and vicinity of the practices necessary to implement management direction.

--Establish monitoring and evaluation requirements needed to ensure direction is implemented and to determine how well outputs and effects were predicted.

The Plan will be reviewed every five years, and updated at least every ten to fifteen years.

Forest Plan preparation is required by the Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA). Assessment, disclosure, and display of environmental impacts is required by the National Environmental Policy Act (NEPA) and the implementing regulations of NFMA. The Plan incorporates or supersedes all previous resource management plans prepared for the Forest.

The key element for achieving the goals and objectives of this Plan is a healthy Forest. The Plan and Final EIS discuss numerous needs and rationales for using vegetation treatment as one of the most practical and efficient methods of achieving many goals and objectives. Vegetation treatment is a management technique in administering the multiple-use resources of the National Forest to attain the overall goal of a healthy, vigorous forest. It is used to adjust existing plant communities to best meet the vegetation needs and resource goals and objectives. Vegetation treatment is accomplished without impairment of land productivity and is guided by the Management Requirements of the Plan, Chapter III. Through commercial and non-commercial treatment activities, vegetation treatment is directed towards the following:

--Providing additional recreation opportunities;
--Providing downhill ski areas;
--Providing public service through utility corridors and electronic sites;
--*Increasing opportunities for significant cultural resource discovery;*
--Improving visual quality;
--Increasing big game winter range;
--Increasing non-game wildlife habitat diversity by increasing edge;
--Improving range conditions;
--Providing wood fiber;
--Increasing tree growth and vigor;
--Increasing water yield without impairing water quality;
--Increasing the forest's resistance to insect and disease infestations;
--Reducing unwanted fuel accumulations;
--Returning revenue to the U.S. Treasury;
--Maintaining industries dependent on National Forest System land management.

When vast acreages of forest cover are uniformly mature, wildlife diversity is limited to relatively few species dependent on mature forests. Burning, cutting, or other vegetation treatment activities will increase vegetation diversity which will provide wildlife habitat diversity. Treatment also reduces the amounts of unwanted fuels. Mature and overmature forests are more susceptible to epidemic insect attack. The attack can spread over large areas creating undesirable effects similar to large burns or clearcuts. If age, size class, and species diversity are enhanced the risk of wide spread epidemic is reduced. Water yield increases also depend on forest resource management. Other outputs and effects as diverse as maintaining visual quality and firewood availability are closely related to the amount of vegetation treated.

Costs associated with vegetation treatment and other activities necessary to achieve the Plan's goals are significant. It is often difficult to justify vegetation treatment expense to achieve goals associated with visual quality maintenance, cultural resource discovery, wildlife habitat improvement, insect and disease prevention, water yield improvement or commercial timber harvest. Doing so may maximize the use of some resources but reduce the total outputs and long-term potential of other resource uses. Individually the costs are too great and the long-term benefits too small. By applying an integrated approach to management overall goals are cost-efficient. For example, timber harvest in aspen enhances wildlife habitat diversity, visual quality, and returns dollars to the U.S. Treasury. This approach has the added benefit of maintaining existing employment in communities dependent on the timber industry. In other cases, prescribed burning, firewood removal, or cutting by Forest Service crews and volunteers may be the most efficient way to treat vegetation.

Vegetation treatment can require road construction. Roads take land out of production and impact the soil and water resources. However, Management Requirements in the Plan, Chapter III, ensure impacts are short-term. An environmental analysis occurs before road construction. Considerations are given to the physical and biological land characteristics as well as the goals of the management area in determining how and where to construct the road.

These characteristics include slope, soil erodibility, vegetation cover, wildlife and fisheries protection, stream proximity and visual resource protection. Road use by people, rather than the actual road itself, causes greater impacts on the environment and on other resource uses and activities. Effective travel management provides resource protection and a safe, environmentally sound, and efficient transportation system. Travel management directs use of existing and future roads. In some areas, no roads will be built. In others, roads will be built, but their use will be restricted. In other instances, roads will be open to public use.

As an example, road construction can open up a previously unroaded area. Road use in this area can impact wildlife seclusion and semi-primitive non-motorized recreation opportunities. Travel management may restrict or close roads leading to, or in, the area based on the goals of the management areas through which the road passes. This road closure or restriction can restore wildlife seclusion, continue semi-primitive non-motorized recreation opportunities but with improved non-motorized access to the area, improve access for other resource activities, prevent unacceptable resource damage and reduce maintenance costs. Public understanding of management area and travel management goals is necessary for public acceptance of area and road closures or restrictions. Additional discussion of travel management is displayed in Chapter III under the "Facilities" section.

LEGISLATIVE BACKGROUND AND EVOLUTION OF NATIONAL FOREST SYSTEM PLANNING

There are numerous legal bases for management of National Forest System lands. Following are some of the more significant laws which must be considered in planning uses for the Forest. These and other laws are included in the Department of Agriculture Handbook entitled "The Principal Laws Relating to Forest Service Activities."

Creative Act of March 3,1891 (26 Stat. 1103, 16 USC 471; repealed by 704(a) of FLPMA, 90 Stat. 2792). Allows the President to set apart and reserve National Forests from the public domain.

Organic Act of June 4, 1897 (30 Stat. 35). States "No National Forest shall be established, except to improve and protect the Forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States," (16 USC 475).

The Secretary (Interior) "shall make provision for the protection against destruction by fire and depredations upon public forests and National Forests... and he may make such rules and regulations and establish such service and will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the Forests thereon from destruction," (16 USC 551).

Transfer Act of 1905 (33 Stat. 628.16 USC 472). Transferred the Administration of the National Forests to the Secretary of Agriculture.

Multiple Use-Sustained Yield Act of 1960. States the "National Forests are established and administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes," (16 USC 528).

The Secretary of Agriculture is authorized and directed to develop and administer the renewable surface resources of the National Forests for multiple use and sustained yield of the several products and services obtained therefrom. In the administration of the National Forests due consideration shall be given to the relative values of the various resources in particular cases. The establishment and maintenance of areas of wilderness are consistent with the purposes and provisions of sections 528 to 531 of this title, (16 USC 529).

The Secretary is also authorized to cooperate with State and local governmental agencies in management of National Forests (16 USC 530).

Wilderness Act of 1964 (16 USC 1131-1136). Provided for establishment and administration of National Wilderness Preservation System to be administered for the use and enjoyment of the American people in such a manner as will leave the system unimpaired for future use and enjoyment as wilderness.

Wild and Scenic Rivers Act of 1968 (16 USC 1271-1287). Provides for designation as "Wild," "Scenic" or "Recreational" and preserves portions of designated rivers from development. Management of rivers within the System is directed toward preserving the scenic, recreational, geologic, historic, or other value that justified its inclusion in the System.

National Environmental Policy Act (NEPA) of 1969 (42 USC 4321-4335). Declares a National policy of "productive and enjoyable harmony between man and his environment," (42 USC 4321).

The detailed statement requirement of NEPA was designed to disclose to the public, President, Congress and agency decisionmakers the environmental consequences of implementation of a proposed action and alternatives to it.

It applies to major federal actions significantly affecting the quality of the human environment.

Federal Land Policy and Management Act of 1976 (90 Stat. 2743). Range management and rights-of-way were dealt with for both National Forest System and public domain lands. For the most part the statute is directed at lands managed by Bureau of Land Management, Department of the Interior.

Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, as amended by National Forest Management Act (NFMA) of 1976 (16 USC 1600-1614). This is the comprehensive framework and primary source of direction to the Forest Service to fulfill its mandate to manage the National Forest System (NFS). The central element of the Act is the institution of land and resource management planning. Planning provides the basic means to achieve effective use and production of renewable resources. Planning also provides proper balance of the use of NFS lands.

Section 6 of the Act requires the Secretary of Agriculture to prescribe National Forest System land and resource management planning regulations. The standards and guidelines in these regulations must be incorporated into National Forest System land and resource management plans.

During the early 1900's most National Forest System lands were inaccessible, public demands for goods and services were low, and conflicts among resources were minor. Priority was given to protecting these public lands from fires, damaging insects and diseases, and unauthorized use. Resource production and use served local rather than regional or national needs. Most Forest Service planning in this era centered on specific work plans for forest land rehabilitation, protection, and reforestation.

By the late 1930's however, there existed a general public awareness that more intensive management of the National Forests--and the use of their various renewable resources on a sustained-yield basis--should also serve the national interest. This prevalent philosophy, coupled with a need for vital timber during World War II, spawned a dramatic expansion of National Forest resource management and utilization in the 1940's and 1950's.

Although early laws governing the establishment and administration of the National Forests referred only to timber and water resources, the other resources--wildlife, forage, and outdoor recreation--have always been protected and managed. By 1939, the Forest Service had made clear its policy to administer the National Forests on multiple-use principles.

Recognizing the lack of specific statutory direction to manage National Forest resources under multiple-use principles, the Forest Service proposed a multiple-use act in late 1950's. The Multiple Use-Sustained Yield Act passed in 1960. It provided Congressional endorsement of Forest Service policy and practice of equal consideration of all National Forest renewable resources.

Land management planning was formalized into a distinct process upon passage of the Multiple Use-Sustained Yield Act. Until shortly after passage of the National Environmental Policy Act of 1969, this process was commonly referred to as "multiple-use plans." Separate plans were made for each National Forest Ranger District.

These multiple-use plans usually zoned National Forest System land and included specific coordinating requirements to ensure compatibility of resource uses. They did not set resource development goals. Such goals were established by separate resource development plans prepared for each National Forest. The Ranger District multiple-use plans were used to coordinate the actions taken to achieve the objectives of the National Forest System resource development plans.

In the early 1960's another factor had also entered the resource picture-intensified public concern for environmental policy. The Nation realized that clean air, clean water, and natural beauty were just as important to its living standard as industrial products. Increased concern for the Nation's forest lands were part of this awakening environmental consciousness. Many Americans became aware of the National Forest System and realized that, although these public lands contained substantial amounts of the Nation's remaining natural resources, there were limits to their uses.

The desire for a quality environment did not lessen the need for forest products and services from the National Forests. While concern for the environment reached new heights, so did the demand for products and services. One result was the passage of the 1964 Wilderness Act. This Act created the National Wilderness Preservation System and provided for the designation of Federal land to be preserved in their natural state.

By the mid-1960's the Forest Service was caught in a dilemma. Conflicting demands for forest resources were increasing rapidly; and the renewable resource base was perceived as shrinking with the implementation of the Wilderness Act. Some critics claimed that NFS management was out of balance, that some uses were being increased at the expense of others, and that the Forest Service was ignoring its mandate to manage the Forest for multiple-uses. And, seemingly, the public wasn't being given a chance to effectively influence the Forest Service decision making process. The Forest Service land management planning process changed in response to these public concerns and to NEPA.

In August 1974, Congress enacted RPA. Although RPA did not significantly change existing Forest Service land management planning procedures, it made the development and maintenance of National Forest System land and resource management unit plans statutory requirements. It re-emphasized that an interdisciplinary approach be used in the land management plan development and maintenance. It required that periodic comprehensive National programs be developed that would integrate all Forest Service activities. And it more directly involved Congress in evaluating Forest Service programs and in assigning priorities. RPA also provided for a periodic assessment of the Nation's renewable resource, including those of the National Forest System. This Assessment provides the basic information for resource management planning at national, regional, and local levels.

The NFMA amended RPA to provide additional statutory direction on the preparation and revision of National Forest System land and resource management plans.

Major highlights of NFMA are land management planning, timber management actions, and public participation in Forest Service decisionmaking. Also featured are requirements for coordination with planning processes of State and local governments and other Federal agencies, and an interdisciplinary approach to plan development and maintenance.

Land management planning direction is the core of the Act. Regulations promulgated in 1979 and revised in 1982 prescribe the process for development and revision of land management plans.

The preceding discussion illustrates the evolution that has occurred in the laws, regulations, and policies directing National Forest System planning. A similar evolution has occurred in planning technology. Recent advances in inventory and analysis techniques have greatly expanded the ability of the Forest Service to incorporate much broader considerations into Forest planning.

Changes in planning policies and procedures have accelerated during the past few years and will continue into the future. These policies and procedures are evolving so rapidly that significant changes often occur between the start and finish of individual Forest Plans. Succeeding Forest Plans are much improved over those prepared just a few months earlier.

It is unrealistic to expect the rapid evolution in planning policies and technologies to stop. Furthermore, it is inappropriate to consider stopping or slowing the Forest planning process pending a solidification of these policies and procedures. In addition, considerations such as the National Forest Management Act, Forest Service policies and public demands require Forest Plans to be completed as rapidly as possible.

For these reasons, it is important to proceed with Forest Plan preparation. The Proposed Plan was prepared under the 1979 NFMA implementing regulations. In November 1982 revised regulations became effective. The revised regulations contain provisions for a transition period. The revised regulations (36 CFR 219.29(b)(1)) state: "If prior to the effective date of an amendment to this subpart, a forest plan either has been approved in final form or released in draft form for public review, the plan need not be modified to incorporate requirements of such amendment, until the next scheduled revision of the forest plan." The Proposed Plan was filed prior to the 1982 regulations effective date. When the Grand Mesa, Uncompahgre and Gunnison National Forests Plan is scheduled to be revised it will be brought into conformance with the 1982 regulations. The Plans will comply with existing laws and, to the fullest extent possible, with current policies and regulations. Forest Plans will be modified to incorporate any new requirements during future revisions.

RELATIONSHIP TO OTHER PLANNING LEVELS AND STUDIES

The Plan is prepared within the framework of Forest Service regional and national planning. The RPA Program sets the national direction and output levels for the National Forest System based on suitability and capability information from each Forest Service Region. Each Region disaggregates its share of the national production levels to the forests of that Region. This distribution is based on detailed site-specific information gathered and analyzed at the forest level.

Each Plan, in turn, validates or provides a basis for changing the production levels assigned by the Region. Activities and projects are planned and implemented by the Forest to carry out the direction developed in the Plan. Information from all of the Forest Plans in a Region will be used in revising a Regional Guide. Implementation of the Regional Guide, will require a review of Forest Plans to determine if amendments are necessary.

The NFMA regulations require the Forest Service to coordinate its national, regional, and forest planning with related planning efforts of other Federal agencies, State, and local governments and indian tribes. These agencies were contacted. All levels of Forest planning were coordinated with the land and resource planning efforts of those respective agencies. This coordination assisted in making the Forest planning effort compatible with the goals, objectives, and priorities of those other agencies.

Budget proposals for fiscal years 1983 and 1984 will have been submitted to Congress prior to the implementation of the Plan in fiscal year 1983. These proposals include funding for operation, maintenance, and investment projects necessary for the continued management of the Forest.

Most of the investment projects, because of their size and complexity, are phased in over a period of 3-5 years. Timber sales to be sold in 1984 are inventoried in 1982, marked and cruised in 1983, appraised and sold in 1984. Roads, campgrounds, wildlife habitat projects and grazing systems are subject to similar phasing.

The number of employees and type of specialists needed to implement the Plan are tied directly to these projects.

The Plan will be implemented in fiscal year 1984. The time needed to bring activities into compliance with the Plan will vary depending on the type of project. Most operation and maintenance activities, new projects, projects in the first year of development, new special use proposals, and permit transfers can be brought into compliance with the Plan within the first year of implementation. Projects in the second to fifth year of implementation and many contractual obligations will continue as originally scheduled.

The Colorado Wilderness Act (Public Law 96-560) designated Fossil Ridge (47,400 acres) a Wilderness Study Area. The Forest Service was directed to further assess the area and to recommend the suitability or unsuitability of the area for inclusion in the National Wilderness Preservation System by 1983. This was done within the context of the Forest planning process. A wilderness study report was prepared and hearings were held.

The Colorado Wilderness Act designated Oh-Be-Joyful (5,500 acres) a Wilderness Study Area. The Forest Service was directed to further assess the area and to recommend the suitability or unsuitability of the area for wilderness classification. A separate Environmental Impact Statement (EIS) was prepared and hearings were held. The administration is currently completing the Final EIS.

The Colorado Wilderness Act retained RARE II's designation for Cannibal Plateau (RARE II Area A-2218). Cannibal Plateau is a further planning area requiring further study before a recommendation can be made regarding suitability or unsuitability for inclusion in the National Wilderness Preservation System. This analysis and evaluation was conducted within the context of the Forest planning process. A wilderness study report was prepared. Hearings will not be held prior to making a final recommendation to Congress as this is within the context of the Colorado Wilderness Act.

In the 1980 National Materials and Minerals Policy Research and Development Act and the Energy Security Act of 1980, Congress directed the Forest Service to encourage private investors in developing domestic mineral resources and to proceed in making recommendations to the Bureau of Land Management regarding leasing proposals on National Forest System land. Minerals Management direction is displayed in Chapter III, Management Requirements for the Forest Plan.

Two Wild and Scenic River Eligibility Reports were developed as part of the Forest planning process. The reports were prepared for the East River and the Taylor River.

This planning effort has been coordinated with the environmental analysis for the proposed Mount Emmons mining project.

GRAND MESA, UNCOMPAHGRE, AND GUNNISON NATIONAL
FORESTS LAND AND RESOURCE MANAGEMENT PLAN

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FOREST LAND AND RESOURCE MANAGEMENT PLAN, MAP . . . . Attached.

I. Introduction

CHAPTER I
INTRODUCTION

ORGANIZATION OF THE FOREST PLAN DOCUMENT

This Plan is the long-term direction for managing the Forest. The Plan contains overall management direction for the Forest. It also serves to inform prospective users as well as other interested publics that any occupancy or use of the National Forest System land must be consistent with the management requirements listed in Chapter III of the Plan.

The Plan consists of this document, management area maps and the accompanying Record of Decision. A map illustrating the management area location is attached to the back cover of this document. Individual management area maps are on file in the Forest Supervisors office. The Plan contains the overall management direction and describes the activities necessary to achieve the desired future Forest condition. The management area maps indicate specific Forest areas where activities are scheduled.

The Plan contains five chapters. The preface and this introduction provide an overview of what a Plan is and why the plan has been prepared. Chapter II outlines the present condition of the Forest's resources, displays how that condition is expected to change with the implementation of the Plan, and identifies research needs. Chapter III contains management direction and is divided into three sections. The first section explains how the Plan is to be implemented. Section Two specifies the goals and objectives for managing the National Forest System lands and resources. This section also contains Forest Direction which details overall management requirements that must be maintained during Plan implementation. Section Three includes individual management area prescriptions detailing the management requirements for specific Forest land areas called Management Areas. The management requirements listed in Forest Direction are applied in addition to the management requirements for individual management areas. Individual management areas are identified on the Management Area Maps located inside the back cover of this Plan. Chapter IV lists the monitoring and evaluation requirements of this Plan. Chapter V provides an index.

The analysis that supports the decisions made in the Plan is contained in the accompanying Final EIS. The Plan and Final EIS are companion documents, neither is complete by itself. The Final EIS describes alternatives to the Proposed Action and discloses the environmental effects of implementing the Proposed Action and other alternatives. The Plan, Chapter III, displays management direction used in alternative formulation. A glossary to aid in reading and interpreting the Plan is included as an Appendix to the Final EIS.

Future environmental documents prepared on the Forest will tier (40 CFR 1502.20 and 1508.28) on the Final EIS prepared for the Plan. Environmental analysis for project implementation will use the Plan as direction. Additional detail may be included in the environmental analyses for project level decisions. Environmental documents for specific projects implemented under this Plan direction will, therefore, be site specific only.

The Plan displays management direction for 2,905,027 acres of National Forest System land. This acreage includes all of the La Garita and Raggeds Wildernesses. The Plan does not disclose management direction for the Lizard Head, Collegiate Peaks, and Maroon Bells-Snowmass Wildernesses. Table I-1 summarizes the area covered by this Plan.

Management direction was established cooperatively between this Forest and the San Juan, White River, and Rio Grande National Forests to ensure uniform management within a single wilderness area. Each Forest will continue to administer their respective portions of the wilderness areas.

TABLE I-1.

ACREAGE SUMMARY

Area	Acres
Total Grand Mesa, Uncompahgre, and Gunnison National Forest System Land	2,953,186
Forest Wilderness Acres Disclosed in Other Forest Plans	88,901
Net Grand Mesa, Uncompahgre, and Gunnison National Forest System Land Disclosed in This Plan	2,864,285
Other Forest Wilderness Acres Disclosed in This Plan	40,742
Total National Forest System Land Disclosed in This Plan	2,905,027

This Plan discloses management direction for the five wilderness areas displayed in Table I-2. This Plan does not display management direction for the Lizard Head, Collegiate Peaks, and Maroon Bells-Snowmass Wildernesses.

Management area direction for the wilderness areas is presented in Chapter III of this Plan. The accompanying map also displays the management direction for the wilderness areas.

TABLE I-2.

WILDERNESS AREAS COVERED IN THIS PLAN
(Acres)

Name	Net N.F. Acres
Big Blue Wilderness	98,235
La Garita Wilderness (including 24,164 acres administered by the Rio Grande N.F.)	103,986
Mount Sneffels Wilderness	16,200
Raggeds Wilderness (includes 16,578 acres administered by the White River N.F.)	59,105
West Elk Wilderness	176,092
GRAND TOTAL	453,618

The San Juan National Forest's Final EIS will disclose alternative management direction for the entire Lizard Head Wilderness. This includes 20,342 acres managed by this Forest. The White River National Forest will disclose alternative management direction for the Maroon Bells-Snowmass Wilderness and the Collegiate Peaks Wilderness. This includes 19,598 acres and 48,961 acres respectively, managed by this Forest.

The "Record of Decision" for the accompanying Final EIS will include the management decisions for the White River and Rio Grande National Forest portions of the Raggeds and La Garita Wildernesses.

LOCATION OF THE FOREST

There are 2,953,186 acres of National Forest System land comprising the Grand Mesa (346,141 acres), Uncompahgre (944,241 acres), and Gunnison National Forest (1,662,804 acres). Within the National Forest boundary, there are 210,217 acres in private or state ownership or other Federal ownership.

The Forest includes portions of the following counties: Delta, Garfield, Gunnison, Hinsdale, Mesa, Montrose, Ouray, Saguache, San Juan, and San Miguel. Table I-3 displays the Grand Mesa, Uncompahgre, and Gunnison National Forest System acres by county.

TABLE I-3.

GRAND MESA, UNCOMPAHGRE, AND GUNNISON NATIONAL FORESTS
ACREAGE SUMMARY
(Within Forest Boundary)

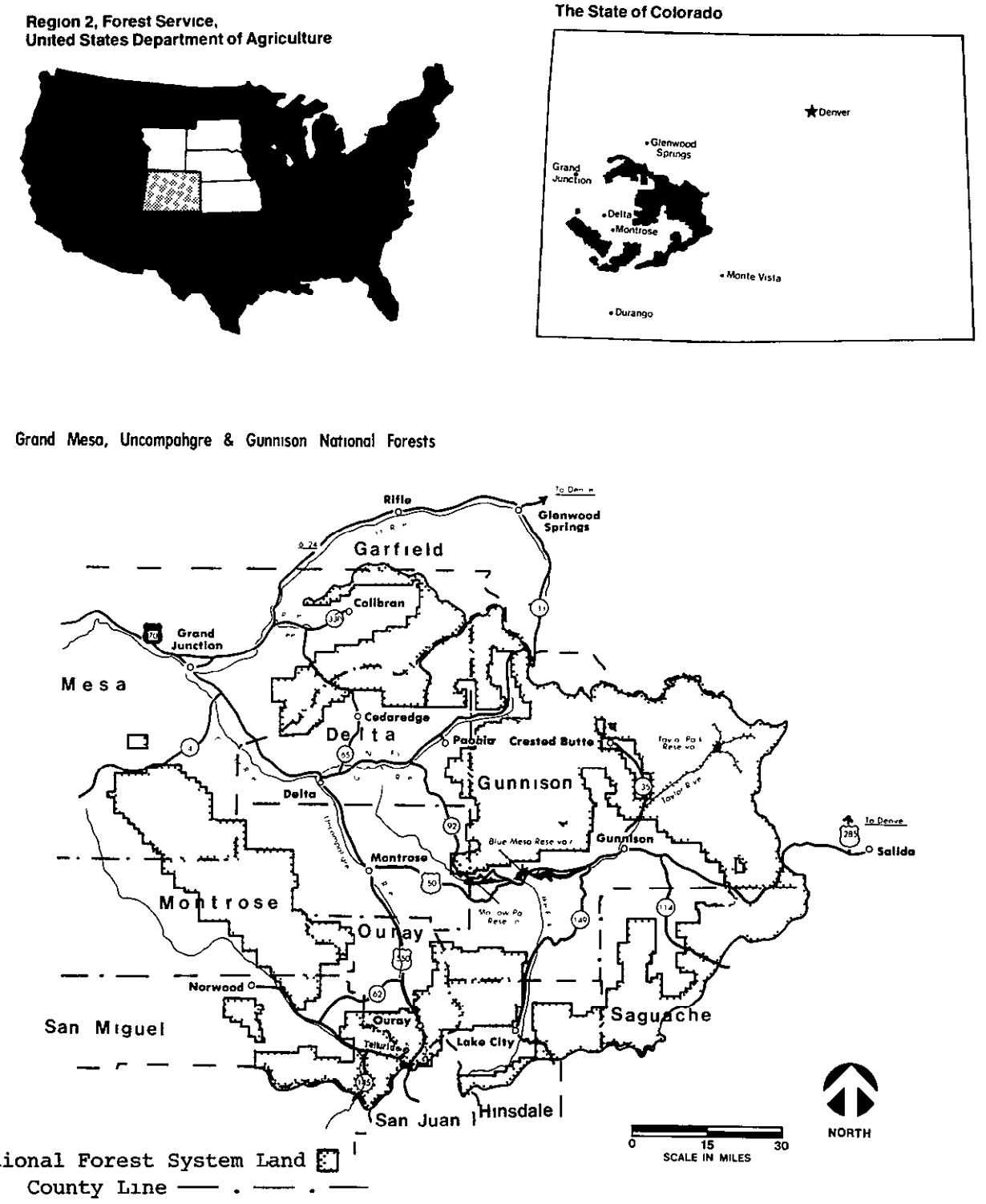
County	National Forest	Other	Total
Delta	191,649	4,672	196,321
Garfield	2,043	0	2,043
Gunnison	1,204,677	89,774	1,294,451
Hinsdale	176,644	2,178	178,822
Mesa	459,848	13,386	473,234
Montrose	304,785	19,232	324,017
Ouray	127,026	23,269	150,295
Saguache	312,481	9,162	321,643
San Juan	2,007	535	2,542
San Miguel	172,026	48,009	220,035
TOTAL	2,953,186	210,217	3,163,403

The Forest is divided into seven administrative units: Cebolla, Collbran, Grand Junction, Norwood, Ouray, Paonia, and Taylor River Ranger Districts.

Figure I-1 is a vicinity map displaying land administered by the Forest.

FIGURE I-1.

VICINITY MAP
(Grand Mesa, Uncompahgre, and Gunnison National Forests)



II. Management Situation

CHAPTER II
MANAGEMENT SITUATION

This chapter describes the Forest as it is today, and how the Forest is expected to change with the implementation of the Plan. The Present describes the Forest setting, resources and uses, the demands placed on the Forest, and the supplies available to meet those demands.

The Future displays the way in which the management direction in the Plan addresses issues and concerns. The Future will summarize the Forest's future condition under the Plan direction. The Plan specifies the type and general location of scheduled activities.

The analysis of the Forest's supply and demand situation is summarized in this chapter. This analysis has identified changes to correct existing problems. The goal of the analysis was to identify Forest uses and outputs that will best meet demand. Research needs are also identified as part of the Forest planning process.

THE PRESENT

PHYSICAL AND BIOLOGICAL SETTING

The Forest's east boundary follows the Continental Divide and the Elk Mountains. The south boundary includes the northern slopes of the San Juan Mountains and the crest of the Wilson Mountains. The west and north boundaries are formed by the Uncompahgre Plateau and Battlement Mesa.

The Forest lies within the upper Colorado River drainage. Major rivers include the Gunnison, Uncompahgre, and San Miguel.

The planning area is located astride two physiographic provinces; Colorado Plateau and Southern Rocky Mountains. The two provinces differ greatly in landforms, rock types, and mineral deposits. Half of the planning area, within the Colorado Plateau Province, is characterized by high flat top mesas and rolling plateaus, sedimentary rocks, and mineral deposits including oil, natural gas, oil shale, coal, vanadium, and uranium. The other half of the planning area is characterized by rugged mountains, igneous rocks, and hardrock minerals including gold, silver, lead, zinc, copper, molybdenum, and uranium. Elevations range from about 6,000 feet to peaks over 14,000 feet.

The Forest is located within the Rocky Mountain Forest Eco-Region of the Highland Province, and includes four major climatic and vegetation zones; lower montane forest, upper montane forest, subalpine forest, and the alpine vegetation. Common vegetation types at the lower elevations include sagebrush, pinyon pine, juniper, Gambel oak, and ponderosa pine. Higher elevations include Engelmann spruce, subalpine fir, lodgepole pine, Douglas-fir, and quaking aspen. The major range types include the mountain meadow, mountain bunch grass, alpine meadow, and aspen-forb plant associations.

Much of the Forest is not in optimum growing condition. The lodgepole pine, Englemann spruce-subalpine fir and aspen types in particular tend to be overmature and therefore susceptible to losses from insect and disease infestations.

Unforested areas consist of grassland, brushland, and alpine communities. Grassland areas occur along streams and are often interspersed with forested areas. Sagebrush and oakbrush communities are common at elevations below the forested area while alpine communities predominate above timberline.

The various vegetation types provide habitat for a variety of game and non-game wildlife species. The more common species include mule deer, elk, black bear, blue grouse and ptarmigan, Gambel's quail, snowshoe hare, and cottontail rabbit. Bighorn sheep inhabit several areas of the Forest. Favorable habitat for the bald eagle and peregrine falcon exists in the planning area. Fisheries include cutthroat, rainbow, brook, mackinaw, and brown trout; kokanee salmon; northern pike; and white sucker.

Vegetation

Forest vegetation contributes to Forest character more than most landscape features. Its form, color, and texture, is easily discernible to the human eye. Society perceives it to have beauty and utility.

The hundreds of individual plant species which occur on the Forest may be classified into less than a dozen vegetation types. Each type lends a unique character to the landscape and has an associated utility to society. Forest management is linked to vegetation treatment because vegetation influences other resource elements.

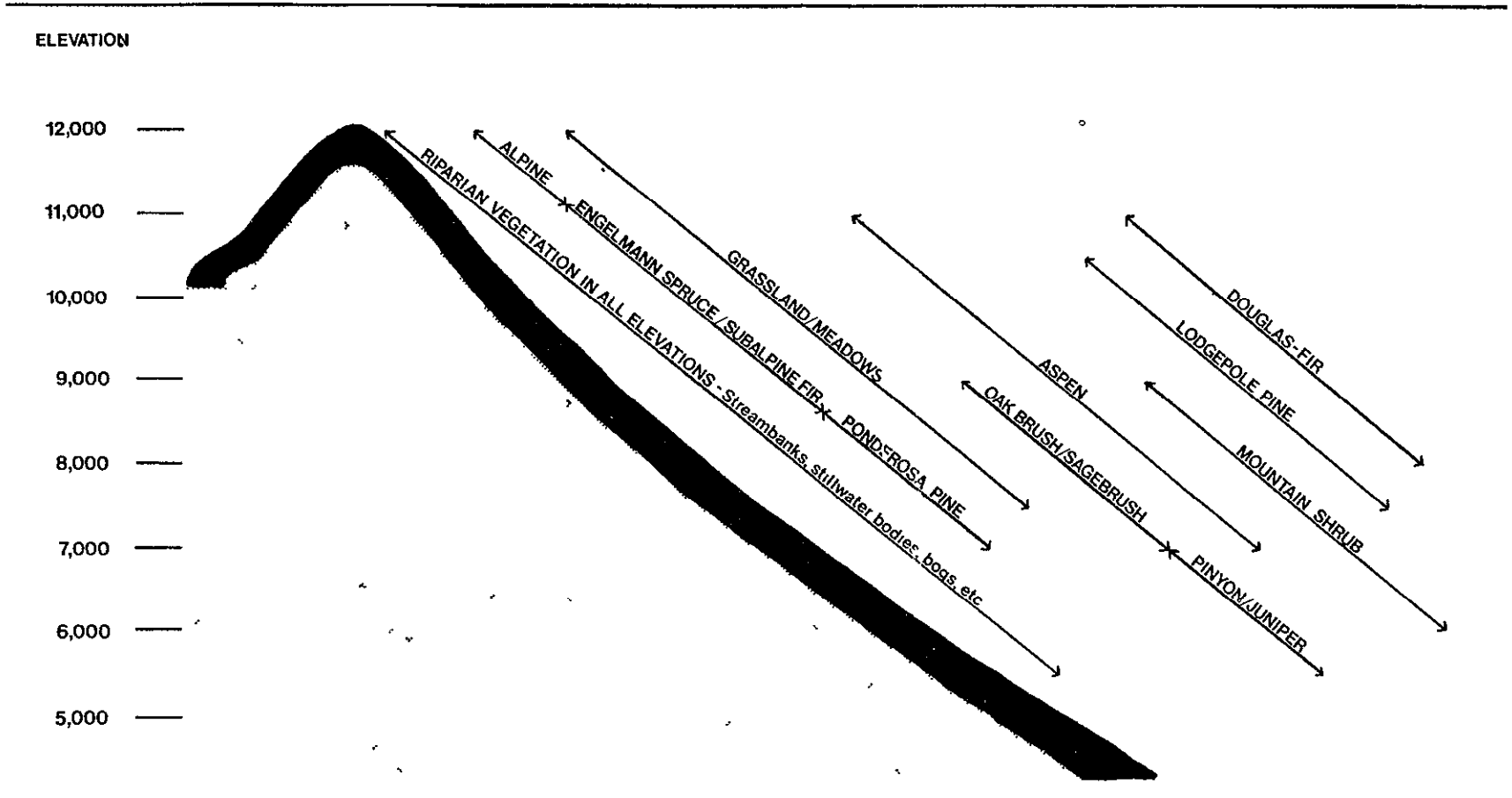
Vegetation is a dynamic resource. It will change over time. The way it will change is based on factors that effect the vegetation and the site on which it is growing. The Forest Reserves were established prior to 1900. Since that time Forest managers have largely controlled the factors that effect vegetation and growing conditions.

Forest managers control these conditions to provide and maintain a healthy, vigorous environment, capable of producing a range of outputs and conditions. There are consequenses associated with not managing the vegetation on the forest.

The following discussions display current condition, management needs, and expected forest condition without management. Figure II-1 displays elevation ranges for forest vegetation.

FIGURE II-1.

GENERAL ELEVATION RANGE FOR FOREST VEGETATION



Alpine - Alpine vegetation grows above native tree elevation limits. It is characterized by grasses, grasslike forbs, low shrubs, and poorly formed trees. Alpine provides a unique opportunity for scenic viewing particularly during the early summer when wildflowers are in bloom. The most important factor controlling the distribution and growth of alpine plants is available soil moisture. The wildlife habitat provided by this type supports elk, bighorn sheep and mountain goats. Ptarmigan and pika are unique to the type. Livestock, particularly sheep, graze the alpine in designated range allotments.

Treatments which modify alpine vegetation are infrequently applied. Due to a short growing season and harsh climatic conditions, major disturbances of this vegetation type are very slow to recover. Alpine vegetation will perpetuate itself unless there is severe ground disturbance.

Aspen - The aspen vegetation type occupies 17% of the Forest and typically occurs at lower elevations interspersed with grasslands, meadows, mountain brush, and other forest types. Aspen stands on the Forest are typically mature to overmature with high disease and mortality levels.

Aspen is important to recreation use. It is an important feature in the landscape character subtypes in the southern Rocky Mountain Physiographic province. Variety classes A and B have the highest visual quality on the forest. Aspen color and texture contribute to the character in many ways. These include edge contrast between aspen and conifer stands, aspen islands in large meadows, and massive textural blocks all occurring in the midground and background. In the foreground distance zone aspen form and texture are important features. Color is a dominant element in all distance zones. Color contrasts with surrounding coniferous vegetation, nonforest areas, bare rock, water and sky. The color change between seasons attracts many forest visits year round.

Mountain grasslands and associated aspen ranges furnish forage for a large segment of the livestock industry in Western Colorado. Many aspen sites support a luxuriant understory of forbs and grasses. These areas are important summer rangelands for both cattle and sheep. It is common to send 100 pound lambs directly to market at the end of the summer grazing season in early September.

The aspen ecosystem is important to Colorado wildlife. Deer and elk use aspen under 6 feet in height for forage. They use taller aspen for thermal and hiding cover. Aspen sprouts above snowcover are critical to winter diet in some areas. The grass, forb and shrub understory provide a summer food source as more forage is present than in conifer stands.

Aspen forests are prime elk calving and deer fawning habitat. This is especially true on south slopes within ¼ mile of water between winter and summer range.

More songbirds are normally observed in aspen forests than in coniferous forests. Aspen provides food, nest sites, and cover for warblers, vireos, blue grouse, owls, thrushes, kinglets, and a variety of other birds. Small mammals such as shrews, moles and mice use aspen forests. Aspen understory and leaf litter provides their food, cover and nest sites. Aspen along riparian zones is the basic food for beaver.

Overmature aspen stands are usually decadent and provide cavities and insects for bird and mammal species. Aspen stands are usually in close proximity to conifer stands that can provide cover during aspen regeneration.

Aspen management in transitory big game range helps support the animals longer in the spring and fall. This takes pressure off summer and winter range and provides extra forage during mild winters.

Aspen regenerates almost exclusively through root sprouting. This results in clones which are genetically identical to the trees from which they originated. Trees within one clone are very homogeneous in such characteristics as rate of growth, form, vigor, resistance to disease, and time of leaf break and leaf fall. These characteristics often vary widely between clones due to genetic and site differences.

To stimulate root sprouting the majority of aspen clones require a major disturbance that results in the removal of most or all of the existing trees. Wildfire has historically been the primary disturbance initiating root sprouting. Control of wildfire has permitted many aspen stands to become overmature with no means of regenerating themselves. In the absence of disturbance, either natural or man-made, much of the aspen will convert to conifer types in 100 to 200 years.

Resources will suffer if the aspen is not treated and allowed to convert to a conifer Forest. This will result in loss of the above described wildlife habitat conditions, reductions in forage supplies, and adverse impacts on the recreation settings associated with the aspen type. In order to maintain the aspen on the forest, 5,800 acres would have to be treated annually.

Douglas-fir - Douglas-fir occupies about 2 percent of the Forest. The Douglas-fir type is more important than its relative area implies. It typically occurs on steep, north-facing slopes at lower elevations and is frequently the only conifer vegetation in a large area. On south-facing slopes, Douglas-fir occurs sparsely on rocky ridges, steep hillsides, and canyon slopes.

Douglas-fir is a long-lived species which is valued for wildlife habitat diversity, scenic quality, and cover on big game winter range. Douglas-fir also contributes to watershed protection and is a desired commercial tree species. The Douglas-fir type has not been treated in the past resulting in mostly mature and overmature stands. Very little acreage of early successional stages of Douglas-fir are known to exist on the Forest.

Douglas-fir is a climax species that reproduces from seed. Without treatment stands mature and die but perpetuate the Douglas-fir type. Currently the stands have a relatively uniform age structure. Natural succession will perpetuate the current uniform distribution.

Gambel Oak - The oak brush vegetation type commonly occurs at lower elevations on the Forest. At its lower elevation range, it is frequently associated with pinyon-juniper trees. At its upper limit it is often interspersed with aspen, Douglas-fir, or ponderosa pine.

The Gambel oak type provides watershed protection, retards snowmelt, provides browse for wildlife and domestic stock, and is a popular firewood species. Gambel oak is capable of reaching tree size on some sites. This savannah type provides highly productive useable forage for wildlife and livestock. The mature trees provide cavities for small mammal dens and non-game bird nests. Food production for deer and turkey is highest on these sites. Gambel oak stands are often thick and animal mobility is severely restricted and the more palatable grasses and forbs are shaded out.

Currently, the majority of the Gambel oak type is estimated to be in an early seral stage. A more balanced structural distribution would improve this type for wildlife and domestic stock and increase the landscape's visual diversity.

Grasslands and Meadows - Grassland and meadow vegetation types occur throughout the Forest interspersed with all other vegetation types. Most grasslands support, or are capable of supporting, numerous kinds of perennial grasses and forbs. Herbage production on mountain grasslands occasionally exceeds 3,000 pounds per acre; however, yields of 1,000 to 2,000 pounds per acres are much more common.

Many of these open parks may be the result of fire. The forage produced in the grassland and meadow vegetation types is available for both wildlife and domestic stock. The open nature of these vegetation types provides a great deal of scenic variety. Management is typically directed at increasing forage while maintaining visual quality.

Lodgepole pine - Lodgepole pine occurs on the Forest primarily in even-aged stands of fire origin. Lodgepole pine is typically a seral species which, in the long-term absence of major disturbance, will be replaced by more shade-tolerant species--generally Engelmann' spruce and subalpine fir. On some sites, however, where site conditions or lack of a seed source prevent the establishment of more tolerant species, lodgepole may form a virtual climax. The type occupies about 6 percent of the Forest and provides scenic beauty, wildlife habitat, firewood and other wood products.

Lodgepole pine is an aggressive pioneer into disturbed sites. Existing stands will deteriorate in 200 to 300 years. As lodgepole pine matures and loses vigor, it becomes highly susceptible to attack by the mountain pine beetle. Under the right stand conditions, individual beetle infestations multiply into an epidemic. The long-term solution to control pine beetle epidemics is to create a mosaic of age and size classes in lodgepole pine and to apply intermediate cultural treatments which promote vigorous, disease free trees.

Mistletoe also heavily infects large amounts of lodgepole pine on the Forest. All of the suitable lodgepole pine stands occur on the Gunnison National Forest. Over 16,000 acres of stagnated lodgepole pine occurs on the Forest. Following disturbance, natural regeneration is often so prolific that the stand is overstocked and may become stagnated if it is not thinned. (Stagnation is a condition where competition between individual trees for light, water, and nutrients is so intense that growth ceases).

If lodgepole pine is not treated the even-aged stands will become overmature and the mountain pine beetle infestation risk will increase. The large areas of beetle killed trees will become increasingly susceptible to wildfire. If serotinous cones are present the lodgepole pine type could be maintained. Without a seed source meadows or other seral species such as aspen could invade burned over areas.

Mountain Shrub - This vegetation type is dominated by one or more of the following species: serviceberry, rabbitbrush, snowberry, and mountain-mahogany. It is located in combination with other brush types and some of the drier forest types. The primary value of the type is for wildlife habitat and domestic sheep range. It has particular importance when available for use as big game winter range. There is a significant imbalance in the structural stages with most of the type in intermediate and late stages on the Forest.

Pinyon/Juniper - This vegetation type is a scrub woodland composed of pinyon pine and juniper. It is a widespread type occurring below the elevation limit of Gambel oak and generally occupies the lowest elevations on the Forest.

The pinyon-juniper type occurs on the driest sites on the Forest and therefore is the least productive type. Vegetation is characterized by small size and low growth rate.

It provides forage for wildlife and livestock, adds scenic variety to the landscape, and furnishes products such as firewood, posts, and Christmas trees. It is important cover on big game winter range. Most of the type is estimated to be in the intermediate and late structural stages which reflects the lack of recent natural disturbance.

Many sites are grazed. This has destroyed much of the small sized understory. An estimated 10 percent is in an early seral stage in old chaining areas.

If left untreated the pinyon-juniper type will replace itself. If it replaces itself naturally the type will retain its current structural imbalance.

Riparian - The riparian vegetation type is a plant association which occur in areas with year-round high water tables. Most of the distinct vegetation types on the Forest are represented in the riparian zone. In addition, the riparian includes willow, cottonwood and alder. These areas are typically located adjacent to streams and around springs, lakes, or bogs. While small

in total area, they represent delicate, very important habitat for wildlife and serve as sediment traps to help purify overland water runoff. Desirable forage production is high, and under proper management these areas are an important part of grazing allotments. The riparian type also provides visual diversity and timber management potential along most forest streams. Riparian is important for recreation such as campgrounds and fishing. Riparian is one of the more productive sites on the forest. It also has the most uneven age structure.

Sagebrush - This vegetation type occupies relatively dry sites on the Forest. It is typically found at lower elevations and is highly valued as big game winter range. It also provides a scenic desert-like landscape and significant forage for livestock. Most of the type is in intermediate and late structural stages. Management techniques used in this type are fertilization, prescribed burning, and mechanical or chemical treatment.

Sagebrush is an invader species that may eventually take over other sites. If left untreated the sagebrush type will perpetuate itself and expand.

Engelmann Spruce/Subalpine Fir - Engelmann spruce and subalpine fir, occupies 17 percent of the Forest. This type occurs at high elevations and represents the climax on the majority of the sites it occupies. This type usually occupies moist sites. Spruce can grow to over 300 years and fir to 250 years. They generally occur in single age stands but occasionally occur in 2, 3, or multi-story stands. Its dense forest growth and layered appearance provides outstanding scenic views. It is also valued for wildlife habitat, watershed protection and production, and wood products.

There is currently a poor distribution of age classes or structural stages. This poor distribution is caused by low levels of management activity and by fire control. Sixty percent of the type is overmature. As the spruce and fir type matures, the trees become susceptible to insect and disease infestations. Subalpine fir is infected first, followed by spruce. A better balance of structural stages is needed to enhance forest health and vigor.

There was a massive spruce bark beetle epidemic during the period 1939 to 1952. It effected the old growth spruce and fir stands on the Forest at that time. Many of the dead trees are still standing.

The spruce/fir type reproduces by seed. It will reproduce itself naturally if not treated. The reproduction will retain the same age class distribution as currently exists. If a natural catastrophe occurs, such as a major fire, the site will probably revert to aspen or lodgepole pine.

Ponderosa Pine - This vegetation type occupies 7 percent of the Forest. It is located almost entirely on the Uncompahgre Plateau between 7,000 and 9,000 feet. Ponderosa Pine grows in pure stands, but can be associated with aspen and oakbrush. Ponderosa pine reproduces by seed. Natural regeneration requires the combination of a good seed crop, ample moisture the spring following seed fall to assure germination and seedling survival, and favorable seedbed conditions. These three conditions coincide rather infrequently.

Historically, low-intensity wildfires burned through ponderosa pine stands at frequent intervals. These fires had little effect on established trees. Thick bark makes ponderosa pine fire resistant. However, these fires prevented the buildup of heavy duff accumulations and kept competing vegetation in check, thus maintaining seedbed conditions favorable to ponderosa pine. Fire suppression over the past several decades has resulted in a buildup of organic litter, making seedbed conditions less favorable for ponderosa pine. Currently the type is mature to overmature, open grown and poorly stocked. There are some uneven aged stands. These are the result of past cutting activity.

Ponderosa Pine is important for timber production, livestock grazing, and wildlife habitat. Elk calving areas can be located in this type at lower elevations.

Ponderosa pine is considered a climax species on many of the sites on which it occurs, particularly near the center of its elevational range. Major disturbances, such as high-intensity fires, heavy logging, or widespread mortality from insect or disease infestations may cause ponderosa pine sites to revert to more seral stages such as aspen, oakbrush or grass. The mountain pine beetle is currently at epidemic levels in some localized areas, but the rate of spread appears to generally be decreasing.

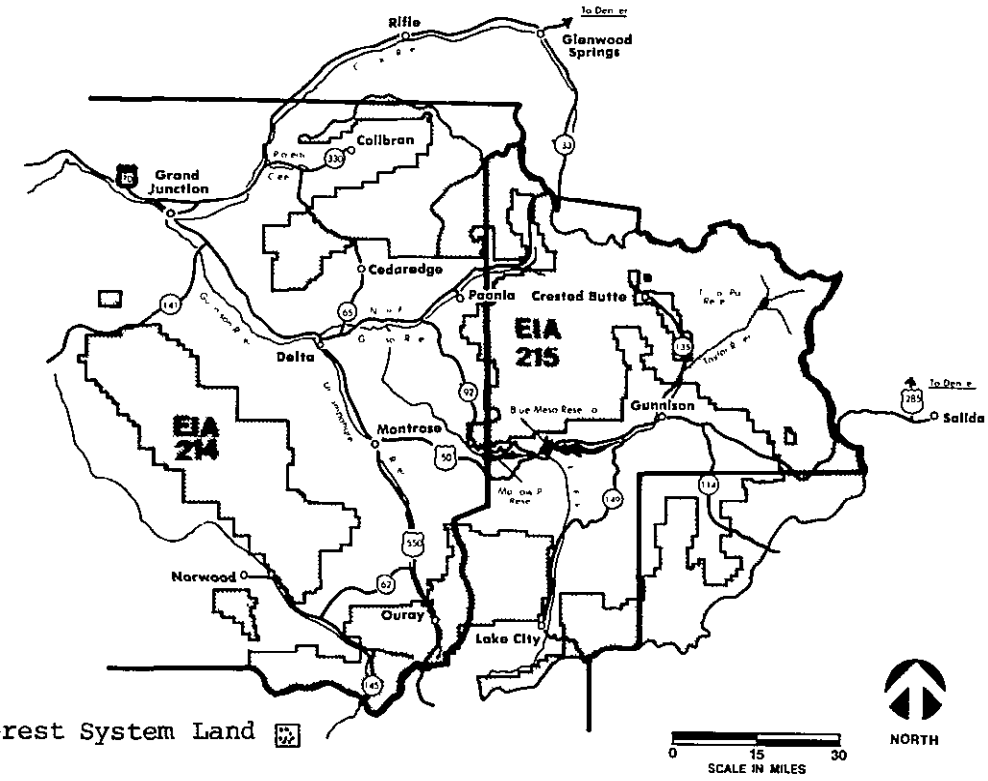
SOCIAL AND ECONOMIC SETTING

Economic Impact Areas

The Forest Planning Area contains portions of 4 Economic Impact Areas (EIA). These areas have been identified to define local economies within the Rocky Mountain Region which Forest Service management may effect. All outputs and effects for the Garfield county portion of the Grand Mesa Forest will be included in the White River National Forest planning process. Saguache County will be analyzed in the Rio Grande National Forest planning process. Figure II-2 displays the location of EIA's 214 and 215. These areas were used to conduct the economic impact analysis.

FIGURE II-2.

ECONOMIC IMPACT AREAS



Population

The planning area is separated from Colorado's front range population centers by the Continental Divide. Total population of the area is about 170,000 people. Population increased approximately 52,000 in the planning area between 1970 and 1980. This is a 43.63% increase and is higher than the state average. The growth rate is expected to remain strong over the planning horizon.

Employment and Income

The average per capita income for the ten county area in 1977 was $5,789. By 1979 it had risen to $7,423.

Unemployment in 1980 was low in all counties except Ouray, where unemployment was 9%. The projected unemployment rate through May 1981 increased to the point that Delta, Ouray, and San Miguel Counties are designated as labor surplus areas.* This is due to the depressed uranium prices and mine closings.

Source: * Colorado Manpower Review - Vol. XVII, No. 7, July 1980.

The total average monthly labor force in the ten county area for 1980 was estimated to be 80,960; of which 77,789 were employed. The unemployment rate for 1980 was 3.9%. The state average was 3.6% at this time. About 14% of this employment (10,900 jobs) are directly, indirectly, or induced by activities on the Forest.

Expenditures and Returns

The fiscal year 1981 Forest budget was 6.3 million, 1978 dollars, including capital investment.

Payments to Counties

Each year, 25 percent of the receipts from Forest outputs goes to the State for distribution to counties in which the forest is located. In 1982, about $304,000 was paid to the 10 counties in the Forest Planning Area from the National Forest Fund Receipts program. The following components comprise the receipts that make up the "25% Fund":

--Gross receipts from timber harvested
--Land use permits
--Recreation permits
--Mineral permits
--Recreation user fees
--Grazing fees

In addition to the above, payments in lieu of taxes are authorized to the counties under one of two options based on the number of "entitlement land" acres, but not for tax exempt lands (but not donated lands) acquired from State or local governments. The amount paid is the higher of (A) 75 cents for entitlement land acres within the county's boundaries, reduced by the amount of certain Federal payments that were received by the county in the preceding fiscal year, or (B) 10 cents for each entitlement land acre within the county, not reduced for Federal land payments received in the preceding fiscal year. Both options are subject to a ceiling based on the population of the county. This ceiling is based on a sliding scale, starting at $50 per capita for populations up to 5,000 and rising to a maximum of $1,000,000 ($20.00 per capita for populations up to 50,000). Under the Option A, if the total calculated payment (75 cents/acre) exceeds the ceiling, the deductions for other Federal land payments received are taken from the ceiling, not the 75 cents per acre figure.

In 1981 the Forest paid a total of $273,000 to the counties in the Forest Planning Area under the 1976 Payment in Lieu of Taxes Act (Public Law 94-565).

Returns to the U.S. Treasury

Each year the Forest returns money to the U.S. Treasury. The amount returned is the total dollars received from all revenue-producing activities conducted on the Forest. In 1981 the Forest returned $879,000 to the U.S. Treasury.

Social Resource Units

The Forest Service has sub-divided the Rocky Mountain Region into Social Resource Unit's (SRU). Social Resource Unit's are a framework for assessing social, cultural, and economic interactions with the physical resources. Social Resource Unit's are homogeneous in terms of settlement patterns and natural barriers that separate the area from other areas in Colorado. The Forest is entirely within Social Resource Unit H.*

This unit is defined by the Continental Divide to the east and the San Juan Mountains Range on the south. The Utah desert isolates the SRU from other units to the west. To the north, the Battlement Mesa Divide and the Mesa-Garfield county line separate SRU H from SRU G.

Millions of people use the Forest annually. Visual quality, a pleasant recreation experience, camping, boating, the opportunity to view and hunt wildlife, and to hike in wilderness all contribute to the Forest's attraction. The attraction is based mostly on the natural environment. The effect of Forest management is to support that natural environment. The major tool the Forest Service has in providing and enhancing these types of experiences is vegetation management.

Human Resource Units

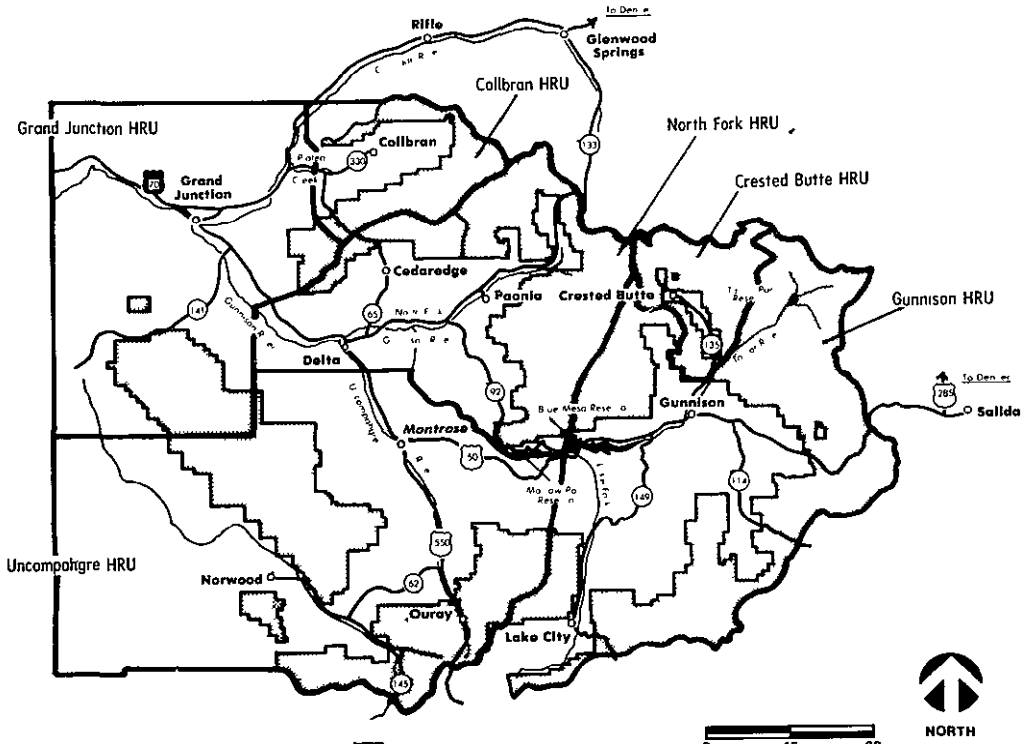
The Forest has delineated six smaller units within SRU H. These are called Human Resource Units (HRU). Human Resource Units are used to design management actions that respond to changing conditions at the Forest and Ranger District level. An HRU is a geographic area characterized by particular lifestyles, economic conditions, institutional arrangements, and topography. HRU's vary in size but are typically larger than individual towns and communities, and they may cross political jurisdictions. The Collbran, Crested Butte, Grand Junction, Gunnison, North Fork, and Uncompahgre HRU's were identified to help design management actions that would be responsive to local issues, conditions, and needs.

The following discussion briefly describes each HRU. General location; settlement; lifestyles; attitudes, beliefs, and values; social organization; and population and land use are described. Figure II-3 displays the location of the six HRU's.

Source: * Final Rocky Mountain Regional Guide

FIGURE II-3.

HUMAN RESOURCE UNITS



National Forest System Land

Collbran Human Resource Unit

The Collbran HRU is located in the east part of Mesa County known as the "Plateau Valley". Its boundary on the north is the Battlement Mesa divide, on the east Plateau Valley watershed divide with Divide Creek watershed, and on the south Mesa County line. The west boundary is a line between the Grand Valley and Plateau Valley. Considerable public interaction exists across this boundary with the Grand Junction Human Resource Unit.

This area was settled in the 1880's by farmers and ranchers. These land use patterns still exist today. Some homesteads have been abandoned, others have consolidated ownership. Ranching is still a basic industry in the area.

Some diversity is generated by the Vega State Recreation Area and Powderhorn Ski Area. The downhill ski industry was established at Powderhorn in 1966.

Lifestyles - Ranching is dependent on the National Forest System for livestock grazing. The water resource has been extensively developed in the past for irrigation use. Tourism is a significant employer. Tourists are attracted by recreation opportunities including big game hunting, fishing, and downhill skiing primarily on National Forest System land. Downhill skiing is centered around the day use Powderhorn Ski Area. Oil and gas exploration personnel work in the HRU on a seasonal basis.

Attitudes, Beliefs, and Values - This unit is ranching oriented. Interest and concern about land and resource management, especially water and grazing, is high. Public issues were raised opposed to additional wilderness designation or additional road construction.

Social Organization - The Collbran HRU is rural and sparsely settled. Limited fire, law enforcement, search and rescue, medical, local news media, and local planning services are available in the area. Education through high school is available. Most residences travel outside the unit, to Grand Junction, for the majority of their purchases.

Population and Land Use - Agriculture continues to be a dominant land use. Private land holdings within the Forest are used primarily for ranching and grazing. There is local speculation that oil shale development may effect population and current land uses. The 1980 census shows a 30% growth rate for the Collbran division of Mesa County for the period 1970 to 1980.

Social Change - Some significant social change may take place in this HRU regardless of Forest Service action. These changes are due to energy and minerals development. Primarily oil and gas and oil shale development.

Crested Butte Human Resource Unit

The Crested Butte HRU is located in the north central part of Gunnison County where the Elk Mountain Range forms the Forest and County boundary. It is essentially the East River drainage including Ohio Creek and part of the Spring Creek drainage.

Prior to 1860, the county was unexplored and used as a summer hunting ground by the Ute Indians. In 1861 gold was discovered in Washington Gulch. In 1872 silver was discovered in the Elk Mountains. The area has a history of gold, silver, and coal mining. The railroad arrived in 1881. In 1952 the last coal mine closed and railroad service ended. The area was revived in 1964 with the development of a downhill ski area. This has established a new economic base for the HRU. By the early 1970's it brought new prosperity to Crested Butte. The resort community of Mount Crested Butte has formed at the Crested Butte Ski Area.

Mining could become a significant element in this HRU. Exploration for the proposed Mount Emmons mining project began in 1974. The company has discovered a large molybdenum deposit in Mount Emmons.*

Source: *Mount Emmons Mining Project, Final EIS, October 1982.

Lifestyles - Ranching and tourism are dependent on National Forest System land. Summer recreation emphasized fishing, boating, picnicking, and camping. Four-wheel drives are popular. Downhill skiing is centered at Crested Butte. Cross-country skiing and snowmobiling occurs throughout the high country surrounding Crested Butte. The water resource is important for irrigation, snow making, and domestic use.

Attitudes, Beliefs, and Values - Public issues indicate local opposition to minerals development and the effect growth will have on water quality and big game population.

Social Organization - The Crested Butte HRU is a rural unit centered around the ski area. Limited fire, law enforcement, search and rescue, medical, local news media, local planning, and commercial trade services are available. Education is available through high school. Most residents travel outside the unit for major purchases.

Population and Land Use - Crested Butte is one of the most sparsely populated HRU's surrounding the Forest. The population is located around Crested Butte and Mount Crested Butte.

Continued rapid growth is expected if the proposed Mount Emmons Mining Project starts. Much of this activity will occur around Gunnison in the adjacent HRU. The 1980 census shows a 237% growth for the Crested Butte division of Gunnison County for the period 1970 to 1980.

Social Change - Some significant social change may take place in this HRU regardless of Forest Service action. These changes are due to minerals development.

Grand Junction Human Resource Unit

The Grand Junction HRU is located at the confluence of the Gunnison and Colorado Rivers. The south border follows the Mesa-Delta County line to the point where the boundary changes to the Mesa-Montrose County line to the State line (omitting the Manti-LaSal National Forest). The west boundary follows the State line to the Mesa-Garfield County line. The north boundary follows the Mesa-Garfield County line. The east boundary is a line between the Grand Valley and Plateau Valley. Considerable public interaction exists across this boundary with the Collbran HRU.

The original settlers migrated in the 1880's from the east into the Colorado and Gunnison River Valleys. Water, climate, and protection provided by the surrounding mountains and plateaus helped establish the farming and ranching industry. The railroad was extended from Denver and Salt Lake City to the Grand Valley in the 1880's. This turned the area into a major distribution center by the turn of the century. This increased the market for agricultural production and the need for more workers.

Lifestyles - Support services and light industry are the major employers in the area. The population is in the middle to slightly younger age group. A secondary employer is ranching and farming. The Forest's water resource is important for irrigation and domestic use. Summer recreation focuses on fishing, camping, four-wheel driving, hiking, and other opportunities on National Forest System land.

Attitudes, Beliefs, and Values - This unit is being urbanized. Public issues indicate concern for continued opportunity for camping, fishing, snowmobiling, and cross-country skiing. Issues were also raised concerning water and mineral development on grazing and wildlife. Interest in land and resource management is high.

Social Organization - Full service fire, law enforcement, search and rescue, medical, news media, planning, and commercial trade services are available. Elementary and secondary school education is available through high school. Mesa College provides opportunity for higher eduction.

Population and Land Use - Grand Junction is an urban area rapidly engulfing the surrounding communities. Growth patterns radiate out from the city center along Highway 6 toward Palisade, west toward Fruita, and south along Highway 50 toward Whitewater. The 1980 census recorded a 50% growth rate for the period 1970 to 1980. This is the most densely populated HRU in SRU "H" and includes approximately one-half of its population.

Social Change - Some significant social change may take place in this HRU regardless of Forest Service action. These changes are due to energy and minerals development.

Gunnison Human Resource Unit

The Gunnison HRU contains most of Gunnison County. Its east and south boundary is the Continental Divide. From a point near Lake City the boundary runs north along the Uncompahgre HRU boundary through the Big Blue Wilderness to the Gunnison River near Blue Mesa Dam. The boundary continues east through the West Elk Wilderness to Purple Mountain and the East River drainage. The north boundary follows the divide between the White River and the Gunnison National Forest.

Settlement at Lake City began when gold and silver were discovered. In 1877, it was unrivaled in population and size on the Colorado West slope. Lake City was a supply point for Animas Forks, Silverton, Ouray, Mineral City, Capitol City, and other smaller San Juan mining camps. Gunnison was incorporated in 1875. In 1881, the Denver and Rio Grande Railroad reached Gunnison. Sargents, Doyleville, and Parlin located along the tracks.

Railroad spurs were built to Crested Butte in 1881 and Lake City in 1889. Mining declined near the turn of the century and the Gunnison area economy changed from mining to logging, farming, ranching, railroad support, and light industry.

Lifestyles - The majority of the work force is employed in retail trade, tourist related business, agriculture, logging, and education (Western State College). Water is important for irrigation, boating, and domestic use. Hunting and fishing are major recreation activities. Recreation visitors provide significant Forest use within the HRU and provide significant impact on the economy.

Attitudes, Beliefs, and Values - Interest and concern in land and resource management is high. The public has a wide spread concern over water use, grazing, wildlife, and preservation of the area in its natural state. The Lake City economy is seasonal and the public believes industrial growth is needed to enhance community growth and stability. Public issues were raised opposed to and supporting additional wilderness designation.

Social Organization - The Gunnison HRU is a large mostly rural unit. Full service fire, law enforcement, search and rescue, medical, news media, planning and commercial trade services are available in Gunnison. Limited services are available elsewhere in the unit. Elementary and secondary school education is available through high school. Western State College provides opportunity for higher education.

Population and Land Use - Ranching and tourism are the dominant land uses. If the proposed Mount Emmons Mining Project begins, employment opportunities will be available in the mining industry, and mining would become a significant economic factor and land use. The 1980 census records a 41% growth rate for Gunnison County for the period 1970 to 1980.

Social Change - Some significant social change may take place in this HRU regardless of Forest Service action. These changes are due to minerals development.

North Fork Human Resource Unit

The North Fork HRU includes Delta, Gunnison, and Montrose Counties. It includes the North Fork of the Gunnison River and part of the Gunnison River. Its boundary on the west and north is the Mesa-Delta County line. On the east it is the Raggeds and Ruby Mountain ranges and the Paonia-Taylor River Ranger District boundary line through the West Elk Wilderness. The south boundary includes the Gunnison River and the Montrose-Delta County line.

The earliest settlement in the North Fork HRU occurred in the early 1880's and became the basis of a new irrigated agriculture economy. Ranchers, farmers, and fruit growers moved into the area to help support the local mining industry. Railroads linked the area with the east and west. The mining industry developed the coal deposits in the North Fork Area.

The mining industry decline in the early 1900's forced residents from the mountain communities to the Delta-Cedaredge area. Through the 1930's, agriculture continued to be the leading income source.

Lifestyles - Ranching, farming, fruit growing, and coal mining are the major industries of the area. Ranchers, farmers, and fruit growers have interests in National Forest System management as it effects water, grazing permits, demand for farm land for other uses and property values. The ranching industry depends heavily on National Forest System for livestock grazing. Water has been extensively developed in the past and is an important resource to the ranching, farming, and fruit growing industries.

Seasonal employment makes up a substantial portion of the agricultural employment. The fruit growing industry hires many migrant workers each season.

Timber is not a major industry in the HRU, however there remains a steady demand for timber products. Eleven percent of the timber volume sold by the Forest is processed at mills in the HRU.

A large percentage of the farmers and ranchers also hold jobs at the coal mines. Most farms and ranches are too small to be self-sufficient. These workers may spend their vacations and weekends working on their farms and ranches. Mine shutdown programs put all employees on vacation at one time.

Forest land within this HRU receives considerable outdoor recreation use. Many recreationists come from the Denver area. The major summer recreation activities are water related. About half of the 103 lakes on Grand Mesa lie within the HRU. Island Lake, Ward Lake, and Crawford and Paonia Reservoirs are the most popular. There are a large number of private summer home developments around many of the lakes on the Grand Mesa.

Attitudes, Belief, and Values - There are two resident groups in this HRU. The first group are the ranchers, farmers, fruit growers, and miners. They value the agricultural lifestyle and available open space. Public issues indicate these residents do not want change. The second group are new miners, retired people, and businessmen that recently arrived in the area. They tend to support growth and diversity.

Social Organization - The North Fork HRU is rural. Full service fire, law enforcement, search and rescue, medical, news media, planning, and commercial trade services are available in Cedaredge, Crawford, Delta, Hotchkiss, and Paonia. Education is available through high school. A vocational school in Delta provides the opportunity for trade education. Many residents travel outside the unit to Montrose and Grand Junction for major purchases.

Population and Land Use - Agriculture continues to be the dominant land use in the HRU. Private land within the National Forest is used primarily for ranching and grazing. The 1980 census shows a 39% growth rate for Delta county for the period 1970 to 1980.

The Cedaredge-Orchard City area is presently growing at a faster rate than the county. Twelve new subdivisions have been annexed in the last ten years. The 1980 census shows a 70% rate for this area for the period 1970 to 1980. Approximately 50% of the new residents arrive from outside the region. Agricultural land east and south of Delta is being developed for residential use.

Social Change - Some significant social change may take place in this HRU regardless of Forest Service action. These changes are due to energy and minerals development, primarily coal mining.

Uncompahgre Human Resource Unit

The Uncompahgre HRU includes the Uncompahgre and San Miguel River drainages. The west boundary is the Colorado-Utah State line. The north boundary follows the Delta-Montrose County line and the Gunnison River to a point near the Blue Mesa Dam. The boundary continues south across private and BLM land, along a divide to the Hinsdale-Ouray County line in the Big Blue Wilderness. On the south the boundary follows the Uncompahgre-San Juan National Forest boundary and the San Miguel-Dolores County line to the Colorado-Utah State line.

The earliest settlers were the Ute Indians. They are the only tribe indigenous to the basin. The first white settlers arrived in 1874. Fort Crawford was constructed for their protection. Settlement began in the mining areas in the San Juan Mountains. These communities included Ouray and Telluride. Many other towns where developed near the mining areas, but were deserted when the mineral resources were depleted. Montrose grew as a trade center. It continued to prosper after the mining decline. Commercial development in Montrose follows U.S. Highways 50 and 550.

In the 1960's, recreation stimulated interest in the old mining communities at Ouray and Telluride. Growth is steady and the demand for land continues to increase real estate prices.

The Uranium Mine in Uravan revitalized the Norwood/Naturita area in the 1970's.

Lifesyles - The majority of the labor force is employed in retail and wholesale trade and government. Skilled trades and professional personnel make up a large part of this group. Most employment is located near Montrose. Although timber is not a major industry in this HRU, there remains a steady demand for timber products. Sixty-three percent of the timber volume sold by the Forest is milled in Montrose.

A labor force is centered around the recreation use of the Uncompahgre National Forest near Telluride and Ouray; and the Black Canyon of the Gunnison National Monument. Telluride is a major destination ski resort. Ouray bills itself as the "Little Switzerland" a major summer resort area. A jeep tour business with national importance exists between Ouray and Telluride.

The HRU offers year round recreation opportunities. Summer recreation emphasizes camping, backpacking, sightseeing, fishing, boating, and picnicking. High use areas include the Uncompahgre Plateau, Miramonte Reservoir, Silver Jack Reservoir, and the Black Canyon of the Gunnison National Monument. Three wilderness areas are located in the unit. The area is highly accessible in the summer months, especially to off-road vehicles. Heavy winter snow provides good downhill skiing at Telluride.

Attitudes, Beliefs, and Values - The attitudes and beliefs of the public in the HRU are diverse. The attitudes of the mining industry are different from those of the downhill ski industry. The attitudes of the agricultural community are different from those of the recreationist. The retired public voices a strong opinion concerning land use. Issues show concern for grazing, wildlife, watershed, skiing, four-wheel driving opportunities, and orderly development.

Social Organization - The Uncompahgre HRU is a mostly rural unit. Montrose is the commercial center for the unit. Limited to full fire, law enforcement, search and rescue, medical, news media, planning, and commercial trade services are available in Montrose, Norwood, Ouray, and Telluride. Education is available through high school.

Population and Land Use - The Uncompahgre HRU contains a number of smaller communities. The Montrose-Olathe area is the regional center. It contains the largest portion of the population. Initially the economy revolved around agriculture. Now it is diversifying its economic base to include light industry, tourism, and agriculture. There is a substantial population of retired residents who have moved to the area because of its stability and unpolluted natural resources. The 1980 census shows 40% growth rate for the period 1970 to 1980.

The Norwood, Naturita, and Nucla area is isolated from the populated area. This area is primarily mining oriented. The depressed uranium market has affected this area to the point that several mills have closed. The communities are anxious to strengthen and diversify their economy. The 1980 census shows an 8% growth rate for the period 1970 to 1980.

The Telluride and Ouray area is also isolated from the populated area. This area is primarily mining and tourism orientated. Telluride has a large development potential related to the Telluride Ski Area expansion. The 1980 census shows 50% growth rate for the period 1970 to 1980.

Social Change - Some significant social change may take place in the HRU regardless of Forest Service action. These changes are due to energy and minerals development. Primarily coal, gold, silver, and molybdenum mining.

PAST AND CURRENT MANAGEMENT AND SUPPLY POTENTIAL

The capacity of the Forest to provide outputs, goods and services is directly related to management of the resource elements and support activities described in the following section. These resource elements are the same ones used in developing the National Assessment and Renewable Resources Program (RPA).

Table II-1 compares the resource production and use levels that would be provided by implementation of the Forest Plan with current management, Regional objectives, demand trends, and maximum resource benchmark outputs, where appropriate. The following defines the levels portrayed in the table.

Current Management

The level of outputs and uses provided by presently approved resource plans. This level indicates what could be attained on a resource-by-resource basis, looking strictly at individual resource plans with no attempts to resolve conflicts. In the case of recreation and wilderness outputs, current management is the theoretical capacity of developed sites, dispersed areas and wildernesses rather than expected use. Wilderness outputs for other than recreation have been included within the other activities such as wildlife, livestock grazing and water yield.

Regional Objectives

That portion of resource uses and outputs from the 1980 Resource Planning Act (RPA) Program that have been assigned to the Forest by the Regional Plan.

Demand Trends

Level of outputs, uses, and services expected to be needed or desired in the future.

Maximum Resource Benchmark Outputs

The estimated maximum level of a given resource output that the Forest can supply.

Forest Plan Objectives

The estimated output schedule through year 2030 with Plan implementation.

TABLE II-1.

CURRENT OUTPUTS, PROJECTED DEMAND, SUPPLY POTENTIAL
(Average Annual Output)

Activity	Category	Unit of* Measure	1981	1981-1985	1986-1990	Time Period 1991-2000	2001-2010	2011-2020	2021 2030
Recreation									
Developed Use	Current Management	MRVD	800	886	1057	1264	1433	1620	1807
(Including Downhill skiing)	Regional Objectives Assigned to Forest			966	1200	1500	1900	2100	2500
	Demand Trends			886	1057	1314	1657	2000	2343
	Maximum Developed Recreation Benchmark			3912	3912	3912	3912	3912	3912
	Plan Objectives			886	1057	1280	1555	1800	2075
Dispersed Use	Current Management	MRVD	1399	1493	1681	1963	2339	2716	3093
	Regional Objectives Assigned to Forest			1333	1700	1700	2200	2300	2300
	Demand Trends			1493	1681	1963	2339	2716	3093
	Maximum Dispersed Recreation Benchmark			4238	4238	4549	4846	5049	5064
	Plan Objectives			1493	1681	1963	2339	2716	3093
Downhill Skiing Use	Current Management	MRVD	222	269	362	502	689	876	1063
	Regional Objectives Assigned to Forest			No Objectives Assigned - - - - - - - - - - - - - - - -					
	Demand Trends			269	362	502	689	876	1063
	Maximum Downhill Skiing Benchmark			3168	3168	3168	3168	3168	3168
	Plan Objectives			269	362	502	689	876	1063
Wilderness									
Wilderness Use	Current Management	MWVD	164	176	194	223	268	332	386
	Regional Objectives Assigned to Forest			No Objectives Assigned - - - - - - - - - - - - - - - -					
	Demand Trends			176	194	223	268	332	386
	Maximum Wilderness Benchmark			467	467	467	467	467	467
	Plan Objectives			176	194	223	268	322	386

TABLE II-1. (Cont.)

Activity	Category	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021 2030
<u>Wildlife</u>									
National Forest System Winter Range Carrying Capacity	Current Management	M ANIMAL	82.7	87 6	87 6	87 8	87.5	87 3	87 5
	Regional Objectives Assigned to Forest			No Objectives Assigned - - - - - - - - - - - - - - - - - - -					
	Demand Trends			100% of output that can be produced - - - - - - - - - - - - -					
	Maximum NFSWRCC Benchmark			93.3	93 3	93 9	95.9	93.7	91.9
	Plan Objectives			87 3	87 3	87 6	87.2	86 8	86.8
Livestock <u>Grazing</u>									
Permitted Grazing	Current Management	MAUM's	320	323.3	330 0	333.3	333 3	333.3	333.3
	Regional Objectives Assigned to Forest			335 0	335 0	335 0	335.0	340 0	340.0
	Demand Trends			100% of AUM's Available. - - - - - - - - - - - - - - - -					
	Maximum Livestock Forage Benchmark			497 2	497.2	501 7	503.0	501.2	496 2
	Plan Objectives			324.0	331 0	335.8	335 8	335.8	335 8
<u>Timber</u>									
Programed Sales Offered	Current Management**	MMBF	28.8	28 0	28.0	28.0	29.3	33.9	39 9
	Regional Objectives Assigned to Forest			33.2	42 0	44 0	45 0	45.0	45.0
	Demand Trends			40	40	40	40	40	45
	Maximum Timber Benchmark			112.3	122.3	152.9	191.2	239.0	179 2
	Plan Objectives			33.0	37 0	35 0	35.0	38 3	41.1
<u>Water</u>									
Yield	Current Management	MMAF	2.869	2.877	2.877	2.880	2.881	2.883	2.884
	Regional Objectives Assigned to Forest			2.724	2.734	2.742	2.750	2 759	2 768
	Demand Trends			100% of Water Yield Will Be Consumed - - - - - - - - - - - - -					
	Maximum Water Yield Level Benchmark			2 909	2 909	2.933	2.955	2 975	2 994
	Plan Objectives			2 880	2.880	2 885	2.888	2 889	2 890

* MRVD = Thousand Recreation Visitor Days
MWVD = Thousand Wilderness Visitor Days
M ANIMAL = Thousand Animals
MAUM = Thousand Animal Unit Months
MMBF = Million Board Feet
MMAF = Million Acre Feet

**No Action alternative from accompanying Final EIS. Current timber management plan schedules 35.0 MMBF annually through 1985.

RESOURCE ELEMENTS

The following describe the resource and support elements managed by the Forest. These are the same elements used in the 1974 Forest and Rangeland Renewable Resources Planning Act.

This discussion displays the current management situation. It must be remembered that the Forest is managed on an integrated basis. Management decisions effect all resources. These effects are designed to achieve multiple resource objectives.

Management activities affect a variety of resources, and decisions are made only after considering the entire set of ramifications involved. Similarly, single management activities are actually designed to serve a variety of resource objectives. For example, treating lodgepole pine stands with small clearcuts to increase water yield will provide additional wildlife habitat and a wood source for various purposes. Water developments are designed to serve the needs of certain wildlife species as well as domestic livestock. Roads are located to efficiently transport logs from a timber sale area to the mill, but these same roads are also designed to provide access for hunting, firewood gathering, and other recreation activities.

Other inter-relationships are more separated chronologically. For example, treating trees to improve successional vegetation stages can provide an immediate timber benefit and will eventually improve wildlife habitat and visual quality. Improved diversity leads to a gradual increase in populations of certain animal species, which in turn increases recreation opportunities for viewing, photographing, and hunting these animals. This series of events may take several years to come to fruition, yet it may be entirely the result of a single management activity.

Resources are part of a very complex system with numerous interactions. They are described individually only to emphasize important aspects of the current situation in some type of organized framework. These elements must be conceptually combined in order to understand the overall current situation on the Forest.

Recreation

Recreation is a major Forest use. An estimated 2.2 million recreation visitor days (RVD's) were recorded in 1980.

The 1981 Colorado Outdoor Recreation Plan (SCORP) identified three recreation activities that the Forest Service in the Region 10 Planning Area should provide additional opportunities for. These are picnicking, four-wheeling and downhill skiing.

Developed Recreation - Existing developed recreation sites on the Forest include: 5 observation sites, 67 family campgrounds, 11 family picnic grounds, 2 group picnic grounds, 2 organization camps, 5 privately owned resorts, 3 concession sites, 2 information sites, and 12 recreation residence sites. These developed recreation sites can support approximately 744,000 RVD's. There are a few private campgrounds near the Forest. Approximately 80% of the developed recreation use occurs at recreation sites on the Forest.

Use in 1980 of National Forest System developed recreation sites was approximately 578,000 RVD's annually. Some sites are more popular and receive more use than others. Currently developed recreation demand exceeds capacity on the Grand Mesa and along Taylor River. Over the last ten years, developed use has increased from 46% to 82% of capacity. Use in the private sector has increased at a greater rate than the public sector.

Demand is increasing for all types of developed recreation. National Forest System developed recreation use is increasing at approximately 2.7% per year. At this rate demand for National Forest System developed recreation will exceed supply after 1990. Table II-2 displays average annual developed recreation demand for the 50-year planning horizon.

There are more than enough potential development sites to meet demand through 2030, if enough budget were available to construct the necessary new sites and it was a goal of the Forest.

TABLE II-2.

DEVELOPED RECREATION DEMAND
(Thousand RVD's Per Year Excluding Downhill Skiing)

	Time Period					
	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Developed Recreation Demand	617	695	812	968	1,124	1,280

Downhill Skiing - The three downhill ski areas on the Forest supported 222,000 RVD's during the 1980 season. Capacity in 1980 on the three ski areas was 737,592 RVD's. Table II-3 displays the existing and potential capacities for the three ski areas and the possible Monarch Ski Area expansion onto the Forest. The ski areas have a potential capacity of 3.04 million RVD's. Crested Butte, Powderhorn, and Telluride have approved master plans. The Crested Butte master plan includes expansion onto Snodgrass.

Demand for downhill skiing has increased. With the projected annual growth rate of 8.4%, downhill skiing use will account for 50% of the Forest's developed recreation use by the year 2010. Downhill skiing use is expected to reach 1,063,000 RVD's annually by year 2030. Crested Butte, the Monarch expansion, Powderhorn, and Telluride have potential capacity to supply downhill skiing opportunities to meet projected demand through 2030. Table II-4 displays the average annual demand for downhill skiing on the Forest.

Demand projections were developed using trend line analysis. As additional data becomes available demand projections may be revised.

TABLE II-3.

DOWNHILL SKI AREA CAPACITY**

	Existing Capacity		Total Approved Master Plan Capacity		Potential Capacity	
Area	PAOT*	RVD*	PAOT*	RVD*	PAOT*	RVD*
Crested Butte	4,050	341,717	10,700	902,812	10,700	902,812
Monarch	0	0	0	0	5,400	437,500
Powderhorn	1,800	147,375	4,500	368,438	4,500	368,438
Telluride	2,800	248,500	15,000	1,331,250	15,000	1,331,250
TOTAL	8,650	737,592	30,200	2,602,500	35,600	3,040,000

* PAOT = People at one time.
RVD = Recreation visitor days.

** The existing Monarch Ski Area is on the San Isabel National Forest. It could potentially expand onto the Forest. The figures represented here exclude the San Isabel capacity.

TABLE II-4.

DOWNHILL SKIING DEMAND
(Thousand RVD's Per Year)

	Time Period					
	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Downhill Skiing Demand	269	362	502	689	876	1,062

The Forest retains downhill skiing opportunities on eight potential sites by utilizing management activities compatible with their long-term future as downhill ski areas. Existing area expansion is encouraged over new site development. The Forest does not actively encourage new development, but responds to proponent interest on an individual basis. Table II-5 displays the potential ski sites using the four-level Priority System disclosed in the Regional Guide. This priority system facilitates land management allocation decisions and guides development scheduling of allocated winter sport sites.

TABLE II-5.

POTENTIAL SKI SITES*

Area	Regional Priority*
Mt. Axtell (Gibson Ridge)	1
Salt Creek	2
Wilson Ridge	2
Carbon Peak	3
Double Top	3
Rambouillet - Slumguillon	3
Twin Peaks	4
Park Cone Mountain	4

Source: * Final Rocky Mountain Regional Guide.

Dispersed Recreation - The Forest provides opportunities for a wide variety of dispersed recreation activities. Total dispersed recreation capacity is approximately 10.2 million RVD's annually. The Forest can supply 847,560 RVD's of semi-primitive non-motorized recreation use and 2,637,154 RVD's of semi-primitive motorized recreation use each year.

These supplies are taken from the existing Recreation Opportunity Spectrum (ROS) Class calculations and are assumed to be constant for the 50-year planning horizon. Some increase in capacity would be created with the addition of access required for vegetation treatment during this time. However, this increase is figured to be less than 10%.

Dispersed recreation use for 1980 was 1.2 million RVD's. Most use occurs along and adjacent to roads. Non-motorized use is expected to increase faster than motorized use. The current use by ROS class is displayed in Table II-6. Current acres by ROS class are displayed in Figure II-4.

TABLE II-6.

1980 RECREATION USE SUMMARY

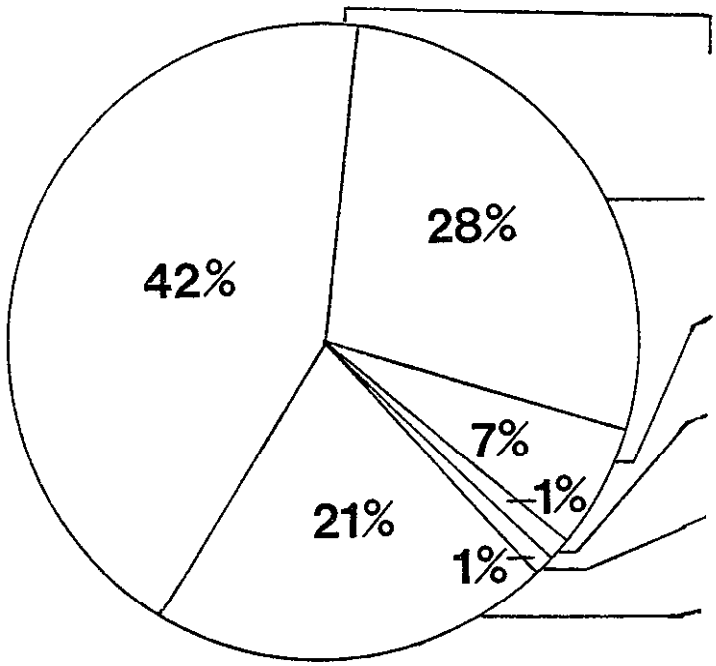
ROS* Class	RVD's**
Urban, Rural and Roaded Natural	696,300
Semi-Primitive Motorized	492,900
Semi-Primitive Non-motorized	45,500
TOTAL	1,234,700

**RVD's = Recreation Visitor Days.

FIGURE II-4.

CURRENT ROS* DISTRIBUTION

(Total National Forest System - 2,953,186 acres)



	Acres
Semi-primitive Motorized	1,265,186
Semi-primitive Non-motorized	816,799
Primitive	217,930
Urban	1,066
Rural	33,021
Roaded Natural	619,184

*ROS = Recreation Opportunity Spectrum

About 125 permits are issued annually for outfitters and guides on the Forest. Outfitting for big game hunting is the predominant activity. This is considered a dependent industry with Forest use essential to its survival. The Forest manages these permits in accordance with the Forest Service Manual and the Forest's Interim Outfitter Guide Policy. New national policy is being developed. When adopted the Forest policy will be modified to be in conformance.

Current direction will increase opportunities for motorized recreation. However, some roads are closed or their use restricted to protect resource values, reduce maintenance budget requirements and to meet other resource objectives. A discussion of travel management is displayed in the Facilities section of this chapter.

The Forest currently has 1,647 miles of system trails. Inadequate maintenance on the trail system hinders dispersed recreation use.

Factors such as population growth, leisure time, and energy costs will affect dispersed recreation use. Dispersed recreation demand will continue to increase faster than developed recreation. As travel expenses increase, the amount of dispersed recreation on the Forest by local residents will increase. The Forest can supply all of the demand for dispersed recreation opportunities.

There is more demand for winter dispersed recreation facilities (i.e. maintained trails, signing, sanitation facilities) than facilities provided. Table II-7 displays the projected demand for dispersed recreation.

TABLE II-7.

DISPERSED RECREATION DEMAND
(Thousand RVD's Per Year)

Time Period	Hunting	Fishing	Off-Road Motorized	Other	Total
1981-1985	166	263	179	885	1,493
1986-1990	167	283	202	1,029	1,681
1991-2000	169	304	236	1,254	1,963
2001-2010	171	324	281	1,563	2,339
2011-2020	173	344	326	1,873	2,716
2021-2030	175	364	371	2,183	3,093

Continental Divide National Scenic Trail - The National Parks and Recreation Act; November 10, 1978; established the Continental Divide National Scenic Trail Corridor. One hundred and thirty miles of this trail corridor are on the Gunnison National Forest. Of the 130 miles, 83 or 64% cross land which offers primitive or semi-primitive non-motorized recreation opportunities. Nineteen miles or 14% cross land which offers semi-primitive motorized recreation opportunities, and 28 miles or 22% cross land which offers roaded natural recreation opportunities.

The Forest has identified the trail on the Gunnison National Forest. Specific descriptions of the trail location are contained in the Forest planning records. The San Isabel National Forest is currently studying a corridor for the trail from Cottonwood Pass to Monarch Pass. The Gunnison National Forest has designated the trail from Cottonwood Pass to Tincup Pass. The trail has not been designated from Tincup Pass to Monarch Pass. The San Isabel National Forest will study further the Cottonwood Pass to Monarch Pass section of the Continental Divide National Scenic Trail.

The Proposed Dominguez - Escalante National Historic Trail - The proposed trail crosses the Uncompahgre Plateau and the Grand Mesa. This route was designated by Congress for study as a National Historic Trail. A Draft EIS was prepared by the National Park Service. The Forest Service response was to recommend "high potential segments" be identified a National Historic Trail and location criteria be developed. A Final EIS has been completed and submitted to the Environmental Protection Agency. The administration recommends that no Federal action be taken at this time due to the general lack of public support for the trail and the present national budgetary constraints.*

National Recreation Trails - The Forest has three National Recreation Trails. The Crag Crest National Recreation Trail is 11 miles long and follows the Grand Mesa ridge. The Crag Crest National Recreation Trail for cross-country skiing is 7.5 miles long in the Scales Lake Area. The Bear Creek National Recreation Trail is six miles long in the rugged mining country near Ouray.

Wild and Scenic Rivers - The Forest planning process included two Wild and Scenic River Eligibility Reports. Reports were prepared for the East River and the Taylor River. They were listed as potential Wild and Scenic Rivers by the Heritage Conservation and Recreation Services (now the National Park Service) in its nationwide rivers inventory.

The eligibility reports conclude that neither the East River nor the Taylor River are eligible for further consideration for inclusion in the Wild and Scenic River System.

Research Natural Areas - One Research Natural Area has been established on the Forest. The Forest planning process evaluated and proposes two other areas for management as Research Natural Areas. A detailed discussion of these areas is available in the Forest planning records. A summary of the three research natural areas follows:

Source: * Dominguez - Escalante Final National Trail Study.

--The Gothic Research Natural Area was designated in 1931, expanded in 1959. It is a 1,050 acre ecological research and study area located 10 miles north of Crested Butte.

--The proposed Escalante Creek Research Natural Area is a 61 acre blue spruce site. It is located in the upper Dry Fork of Escalante Creek.

--The proposed Tabeguache Research Natural Area is a 350 acre site containing ponderosa pine. It is located nine miles northeast of Nucla.

Special Interest Areas; Cultural and Natural - There are cultural (prehistoric and historic) and natural resources on the Forest. In most cases, the location is kept confidential to protect these resources from vandalism and to preserve them for scientific and educational purposes. The Forest's historic overview is complete in three volumes prepared jointly by the BLM and Forest. Work is proceeding on a portion of the prehistoric overview through a cooperative agreement. Until the prehistoric overview is finished, data will be adapted from the completed BLM prehistoric overview of the surrounding areas.

Approximately 195,000 acres, 7% of the Forest, have been surveyed for cultural resources. Cultural resource surveys take place before any vegetation treatment activities. Vegetation treatment increases the opportunities for significant cultural resource discovery.

Two natural special interest areas are managed on the Forest. The Forest planning process examined the records on 15 other areas for management as special interest areas. A detailed discussion of the areas is located in the Forest planning records. A summary of the examination results of the 17 special interest areas follows.

Dry Mesa Dinosaur Quarry Paleontological Site - The quarry is a 40 acre site located within the Jurassic Morrison formation and contains fossils with a geologic age of approximately 150,000,000 years. This quarry is located 26 miles southwest of Delta. Excavation activity has yielded remains of many different kinds of extinct animals including partial skeletons of animals not previously known to science.

Slumgullion Earthflow National Natural Landmark - The earthflow is a natural geologic process associated with the erosion of unstable geologic and soil features. It includes approximately 900 acres of BLM land, 300 acres of National Forest System land, and 100 acres of private land. It is located two miles south of Lake City. It is designated a National Natural Landmark and is listed in the National Registry of Natural Landmarks. It is not a registered landmark since all owners have not agreed to protect its value. The Colorado Natural Areas Program has also designated the earthflow as a Colorado Special Interest Area.

Proposed Ophir Needles National Natural Landmark - The Ophir Needles is a geologic formation formed by alpine erosion etching out spectacular topographic spires from highly pointed intrusive rock. This intrusive cuts sharply across a varied sequence of sedimentary and volcanic rocks, and the discordant contacts are exceptionally displayed over a vertical range of about 1,000 feet. This formation is 10 miles southwest of Telluride. Ophir Needles is being nominated by the National Park Service for inclusion in the National Registry of Natural Landmarks.

Natural Special Interest Areas Being Studied - Eleven potential National Natural Landmarks are being studied by the National Park Service to determine their eligibility. They include: Cochetopa Park Caldera, Elk Mountains, Fossil Ridge, Lizard Head Pass, Mount Bellview, Mt. Sneffels, Potosi Peak, The Castles, Tomichi Dome, and Waunita Hot Springs. Gothic Research Natural Area is also being studied for dual designation as a National Natural Landmark by the National Park Service.

The Mt. Emmons Iron Bog will be protected from activities detrimental to its maintaining the habitat of Drosera rotundifolia L. This is a small carnivorous round-leaf sundew plant located in peaty or wet, acidic soils. Projected mining activities on adjacent private land may affect the bog. Close coordination will be necessary with the projected mining project.

Natural Special Interest Areas Rejected - Three areas have been studied by the National Park Service and determined to be ineligible for the National Natural Landmark's registry. These include: Black Face; Lizard Head; and San Juan, Silverton and Lake City Caldera Complex.

Proposed Alpine Tunnel Historic District - The district is approximately 60 acres of National Forest System land. It consists of three non-contiguous parcels of railroad that were built as part of the Denver, South Park, and Pacific Railroad. With the tracks reaching 11,523 foot elevation, the Alpine Tunnel became the highest section of adhesion railroad in the world. The Palisades parcel is known for its use of cribbing to stabilize the narrow points of the railroad route. The district is located approximately 40 miles east of Gunnison. The Alpine Tunnel has been nominated to the National Register of Historic Places.

Proposed Englehart Park Archeological District - The district is 664 acres of National Forest System land. It contains nine prehistoric sites and twenty-six prehistoric isolated finds. Englehart Park Archeological District has been nominated to the National Register of Historic Places. The Forest's recommendation is that it be protected by avoidance until agreements are made to interpret or study the area.

Visual Resource - The Rocky Mountain Region has been divided into three geographic areas for visual resource planning. These areas are: The Southern Rocky Mountains, Central Rocky Mountains, and Great Plains. Each province is divided into ecological land units that have similar landform, vegetation and soil characteristics. These units function as landscape character subtypes. These subtypes are a frame of reference in classifying the physical features of an area into variety classes.

The Forest is in the Southern Rocky Mountain physiographic province and includes eight landscape character subtypes.

The number of landscape character subtypes makes the Forest visually complex. Visual resource management includes reducing undesirable contrast and retaining or creating natural-appearing variety in the landscape. To accomplish this requires that particular attention be paid to the form, line, color, and texture associated by management activities. On the non-forested land, the line, color, and structure placement are especially important. In the forested areas the visual impact on landscape character and variety is critical.

The majority of land on the Forest is visible in middleground and background views from the mountain valleys. Vegetation treatment increases ecological diversity. This usually enhances scenic beauty as long as the treatments emulate natural growth patterns and shapes in the surrounding landscape.

Wilderness

The Forest administers all or portions of eight wilderness areas. These areas are displayed in Table II-8.

TABLE II-8.

DESIGNATED WILDERNESS
(Grand Mesa, Uncompahgre and Gunnison Acres Only)

Wilderness	National Forest System Acres
Big Blue Wilderness	98,235
Collegiate Peaks Wilderness	48,961
LaGarita Wilderness	79,822
Lizard Head Wilderness	20,342
Maroon Bells-Snowmass Wilderness	19,598
Mount Sneffels Wilderness	16,200
Raggeds Wilderness	42,527
West Elk Wilderness	176,092
TOTAL	501,777

Kannah Creek, Roubideau, and Tabeguache were listed suitable for inclusion in the National Wilderness Preservation System in the RARE II Final EIS. Section 107(b)(2) of the Colorado Wilderness Act released these areas from further wilderness consideration in this planning period. These areas were not analyzed for wilderness in this Plan.

Recreation settings within wilderness are categorized pristine, primitive, semi-primitive, and high density day use. The settings consider area size, trail use, the influence of human activity within and outside the wilderness, opportunity for solitude, and potential for encountering other users.

Pristine wilderness recreation settings offer very high levels of solitude, very high opportunities for challenge, risk, and self-reliance. Trail and camp encounters will generally be very low, 0 to 2 other parties per day. Primitive wilderness recreation settings offer high levels of solitude, high opportunities for challenge, risk, and self-reliance. Trail encounters will generally be low, less than five other parties per day. Semi-primitive wilderness recreation settings offer moderate levels of solitude, moderate opportunities for challenge, risk, and self-reliance. Trail encounters will generally be moderate to high, 5 to 20 other parties per day. High density recreation settings offer low levels of solitude, low opportunity for challenge, risk, and self-reliance. Trail encounters will generally be high, greater than 20 other parties per day.

Oh-Be Joyful Wilderness Study Area - The RARE II Final EIS listed Oh-Be-Joyful unsuitable for wilderness. It was listed a Wilderness Study Area in the Colorado Wilderness Act. A Draft EIS for Oh-Be-Joyful Wilderness Study Area was transmitted to the Environmental Protection Agency on June 4, 1981. The Forest Service preferred alternative in the Draft EIS is unsuitable for inclusion in the National Wilderness Preservation System. The administration is currently completing the Final EIS. If Congress does not act within two years from the date of submission of the President's recommendation to Congress, the Oh-Be-Joyful area will be managed non-wilderness.

Until Congress acts or until two years pass from date of the President's recommendation on the Oh-Be-Joyful Wilderness Study Area, the area will be managed to maintain its existing wilderness character. Existing uses will continue. Livestock grazing will continue and range structural improvements can be maintained and constructed.

Existing Wilderness - About 17% of the Forest, 501,777 acres, is designated wilderness. Of this total; 416,043 acres were designated wilderness by the Colorado Wilderness Act.

This Plan displays management direction for the five wildernesses displayed in Chapter I. Table II-9 displays current wilderness use for the five wilderness areas. Capacity of the five wilderness areas is approximately 418,000 wilderness recreation visitor days (RVD's).

TABLE II-9.

1980 WILDERNESS USE

Wilderness/Forest	MRVD's*	Trail Miles	MAUM's*
BIG BLUE			
Uncompahgre	52.4	250.0	5.6
LA GARITA			
Gunnison	9.2	120.0	2.3
Rio Grande	22.4	47.0	1.1
MOUNT SNEFFELS			
Uncompahgre	10.9	60.0	.7
RAGGEDS			
Gunnison	12.3	80.0	1.8
White River	1.2	14.5	.6
WEST ELK			
Gunnison	56.0	220.0	9.0
TOTAL	164.4	791.5	21.1

* MAUM's = Thousand Animal Unit Months.
MRVD's = Thousand Recreation Visitor Days projected back to 1980 use for each wilderness (Recreation Base Year is 1980)

Future wilderness use can be expected to rise during the next decade at nearly the historic rate of increase. Changes in this rate beyond the next few years will depend on factors such as travel costs and leisure time. Grazing use is expected to remain steady. Table II-10 displays average annual wilderness demand over the planning horizon.

TABLE II-10.

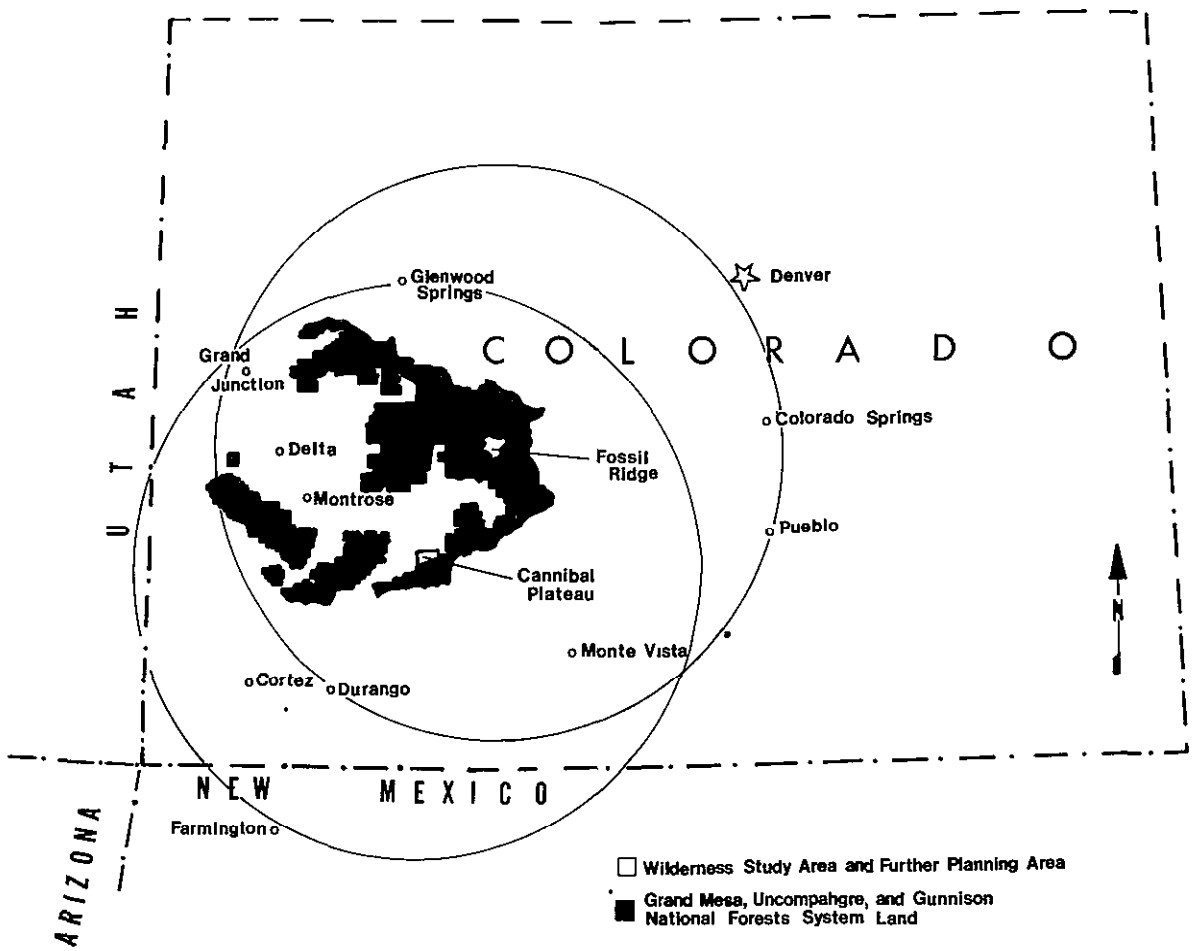
WILDERNESS DEMAND
(Thousand RVD's Per Year)

	Time Period					
	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Wilderness	176	194	223	268	322	386

Wilderness Study Area and Further Planning Area - There are two areas eligible for wilderness suitability analysis on the Forest. Figure II-5 displays the general vicinity and major population centers within a 100 mile radius of Fossil Ridge Wilderness Study Area and Cannibal Plateau Further Planning Area.

FIGURE II-5.

FOSSIL RIDGE WILDERNESS STUDY AREA AND
CANNIBAL PLATEAU FURTHER PLANNING AREA
VICINITY MAP
(The circles display communities within 100 miles
of the Study Areas.)



The Fossil Ridge Wilderness Study Area is located in Gunnison County, Colorado, about 8 miles northeast of Gunnison and 125 air miles southwest of Denver. It is roughly located between Taylor Canyon and Union Park on the north and east; and Quartz Creek on the south.

The Cannibal Plateau Further Planning Area is located in Hinsdale County, Colorado, approximately 3 air miles east of Lake City and 160 air miles southwest of Denver. The area is located immediately adjacent to the BLM's Powderhorn Primitive Area. The Primitive Area, containing 40,480 acres, was formally designated by the Secretary of the Interior in August, 1973. In the BLM Wilderness Study, Powderhorn Primitive Area was identified an Instant Study Area. A Draft EIS, which identified Powderhorn Primitive Area plus an additional 4,471 acres (44,951 acres total) suitable for wilderness classification, has been prepared. This primitive area has been recommended for classification as the Powderhorn Wilderness.

--Fossil Ridge Wilderness Study Area - The RARE II Final EIS listed Fossil Ridge unsuitable for wilderness. The Colorado Wilderness Act identified Fossil Ridge a Wilderness Study Area (WSA). Fossil Ridge Wilderness Study area contains 47,400 acres of National Forest System land.

The Colorado Wilderness Act requires the Secretary of Agriculture to complete a study of the Fossil Ridge area. The Act provides Congress with unlimited time to act on the administration's recommendation of suitability or unsuitability of Fossil Ridge for wilderness. The Fossil Ridge Wilderness Study Report was attached to the Draft EIS as a separate document and contained more detailed information on the study area.

The Record of Decision for the Final EIS will recommend the suitability or unsuitability of Fossil Ridge Wilderness Study Area for inclusion in the National Wilderness Preservation System.

A legislative EIS will be prepared based on information and analysis disclosed in the Final EIS for the Forest and an analysis of the public hearing records. Public hearings were held on January 11, 1983, in Gunnison and January 12, 1983, in Denver. The Draft EIS for the Forest was issued on October 25, 1982, for public review and comment. The comment period on the Proposed Plan and Draft EIS and the hearing record for the Fossil Ridge Wilderness Study Area closed on February 19, 1983.

The legislative EIS with the Regional Forester's recommendation will receive further review and possible modification in the offices of the Chief of the Forest Service, the Secretary of Agriculture, and the President of the United States. After the President transmits the Administration's final recommendation to Congress, the legislative EIS will be filed with the Environmental Protection Agency and distributed to the public. Final decisions on wilderness designation have been reserved by Congress.

Until Congress acts, the Fossil Ridge Wilderness Study Area will be managed to maintain its existing wilderness character while still permitting existing uses. Livestock grazing and dispersed motorized recreation will continue and range structural improvements can be maintained or constructed.

--Cannibal Plateau Further Planning Area - The RARE II Final EIS listed Cannibal Plateau a Further Planning Area. The Colorado Wilderness Act retained its designation as a Further Planning Area (FPA).

Suitability or unsuitability for inclusion in the National Wilderness Preservation System is determined by physical, biological, social, and economic characteristics.

Fish and Wildlife

Wildlife - The Forests' varied habitat supports 314 wildlife and fish species. Of these, 96 species are hunted, fished, or trapped. In 1980, hunting generated 105,200 RVD's and fishing generated 243,200 RVD's. All wildlife uses are expected to increase in the future. Habitat management is a joint effort with the Forest and the Colorado Division of Wildlife (DOW). The Comprehensive Statewide Wildlife Management Plan for National Forest System Lands In Colorado (1980-1984), jointly prepared by the Colorado Division of Wildlife and the Forest Service provides further detail on fish and wildlife population estimates and helps to set priorities for wildlife and fish projects.

The variety of animals is determined by habitat diversity within the Forest. Aspen stands, shrub and grasslands, rock outcrops, cliffs, and riparian areas provide variety to a predominantly coniferous forest cover. Wildlife habitat diversity is related to vegetation diversity through both its composition and its structural complexity. Both the composition and various structural stages are used to determine the overall wildlife habitat diversity.

Habitat diversity varies from area to area on the Forest. In general, the lodgepole pine component has the poorest diversity with a high percentage being in the mature or overmature classification. Conversely, in some areas the intermediate stages, poles and immature sawtimber, predominate. The reason for these spatial imbalances of age classes is tied to the fire history on the Forest prior to protection and accessibility or inaccessibility of the given areas, with timber harvest having been concentrated in the more accessible areas. Vegetation treatment through commercial timber harvest, prescribed fire and other management activities can increase habitat diversity.

The structural stages in spruce/fir, Douglas-fir, and lodgepole pine types is similar. In lodgepole, Douglas-fir, and spruce/fir, there is generally a lack of young trees, i.e., seedling-sapling.

Of the non-forested habitat types, the alpine is in good condition. Only a few activities, primarily dispersed recreation, affect its wildlife habitat value. The grassland habitat varies in condition with a few areas of livestock-big game competition.

The mountain brush and oakbrush habitat types are of vital significance due to their importance as winter and spring range, principally for deer and elk. A high percentage of this type is overmature and has grown out of reach of wildlife.

Aspen is a major habitat for many wildlife species. Aspen maintenance and regeneration is important for habitat diversity. Much of the aspen on the Forest is overmature and in need of regeneration.

Habitat effectiveness is influenced by the amount of human use and activities that occur within the area. The frequency and time of year of disturbance are important factors.

Terrestrial wildlife habitat can generally be described as either forested or nonforested. Table II-8 displays the percentage breakdown between forested and nonforested habitats by species.

TABLE II-8.

FORESTED AND NONFORESTED HABITATS
(Percent)

Forested	Percent	Nonforested	Percent
Aspen	37	Oakbrush	40
Ponderosa	5	Mixed Browse	16
Spruce-fir	42	Grass	30
Lodgepole Pine	16	Pinyon/Juniper	9
TOTAL	100	Meadow	2
		Barren/Rock	1
		Water	2
		TOTAL	100

Mule deer are found in the forested and open shrubbed areas at both low and high elevations. They also frequent stream bottoms. They are predominantly browsers, but do utilize forbs and grasses at certain times of the year. Elk use semi-open forests, parks, meadows and tundra mountain situations. Since they gather in large herds and have a comparatively high reproduction potential for a large game animal; the grasses, forbs and browse species on which they feed must be present in comparatively large quantities.

The limiting factor for elk and deer is winter range. Only a small portion of the total winter range for these species is located on National Forest System land. Critical winter range is at lower elevations on BLM and private land. The Forest is coordinating with the State and other Federal agencies and private landowners to agree upon manageable herd sizes in relation to the carrying capacity of winter range. Cooperative vegetation treatment activities with the DOW in habitat improvement include prescribed burning in oak types and aspen regeneration. Vegetation treatment of a winter range's climax successional stage improves diversity and suitability of the range.

Approximately 242,000 acres of critical winter range is on the Forest. There is sufficient summer range on the Forest to greatly increase deer and elk numbers. The Forest's current winter range carrying capacity is 82,700 elk and deer annually. These numbers, agreed upon with the DOW, include 21,450 elk and 61,240 deer.

There is summer range capacity to increase big game numbers. The Forest has the highest deer and elk populations of any National Forest in the United States. These big game species are considered on any action which affects their habitat on National Forest System land. The Forest does not intend to increase summer range for increased capacity. Winter range is the limiting factor. The Forest can increase summer or transitory range quality through vegetation treatment activities like timber harvest.

Lodgepole stands where no treatment occurs have low diversity levels. Thick stands of even-age poles block big game movement and greatly limit understory vegetation. However, small clearcuts north of Taylor River have opened a large expanse of lodge pine infested with mistletoe. These clearcuts created small parks with native forbs and grasses. Elk use has greatly increased by providing feeding habitat adjacent to cover. Many roads leading to the openings have been blocked, ensuring big game seclusion. Human pressure in the alpine areas move elk out as packpackers arrive in the summer. Although summer range is available, it is not being used in the alpine due to back-packer use.

Creating openings through clearcuts in lodgepole pine has been done through timber harvest when a product is removed. This same process would have taken the entire Forest wildlife budget to accomplish a portion of the beneficial effects accomplished through timber management. When big game animals come off the Forest in good shape, they have fat reserves to help them through difficult periods in the winter range. Studies (Journal of Wildlife Management) have shown better conception when deer and elk are in good condition with a resulting good fawn and calf crop.

Deer and elk hunting on the Forest results in substantial contributions to the State and local economies. The number of hunting permits issued each year is controlled by the State. According to the State Comprehensive Wildlife Plan, approximately 24 percent of the elk herd is harvested annually. Harvest figures for deer are not available for the Forest.

Black Bear ranks third among big game species behind mule deer and elk in sport hunting. Females have their first young at age four and only have cubs every other year. It is the only big game animal which hibernates. Black Bear is hunted from the time it leaves hibernation, usually in mid-April to mid-May thru June. It is also hunted concurrently with deer and elk until it enters hibernation in mid-October thru November. Mast in the oak brush type is important to build fat reserves for winter. Research is being done on the Forest by the Colorado DOW to obtain basic data on this least understood big game species in Colorado.

Rocky Mountain bighorn sheep are present on six areas of the Forest. Summer ranges at high elevations are mostly within wilderness areas. The majority of winter range occurs on BLM land. The quantity and quality of summer range and migration corridors is currently not optimal for bighorn sheep. Cooperation with the DOW is continuing in lungworm treatment through baiting and medication.

Threatened and Endangered Species - The Endangered Species Act of 1973 requires all Federal departments and agencies to conserve threatened and endangered species. Table II-9 displays the federally or state-designated, threatened or endangered , and plant or animal species that may occur on the Forest. The Forest has identified hack sites for the peregrine falcon.

TABLE II-9.

THREATENED OR ENDANGERED
PLANT OR WILDLIFE SPECIES

Common Name	Scientific Name
American Peregrine Falcon	Falco peregrinus anatun
Spineless Hedgehog Cactus	Echinocereus triglochidiatus var. inermis
Whooping Crane**	Grus americana
Greater Sandhill Crane**	Grus canadensis tabida
Wolverine***	Gulo gulo
Bald Eagle	Haliaeetus leucocephalus alascanus
Lynx***	Lynx canadensis
Colorado River Cutthroat*	Salmo clarki pleuriticus

* Listed only as Colorado Threatened and Endangered Species.
** Migrant occurence.
***Doubtful existence on the Forest:

Forest Service botanists have diligently attempted to identify species and locations of plants which may have endangered, threatened, or sensitive status. In addition, these botanists have been involved with recommendations and information pertinent to the U.S. Fish and Wildlife Service (US F&WS) listings. On December 15, 1980, the US F&WS published in the Federal Register a list of those plant species native to the United States that were being reviewed as endangered or threatened under the Endangered Species Act of 1973, as amended. Forest personnel have inventoried 1 plant species listed in this publication as Category 1. Five plant species in Category 2 possibly occur although not all have been located on the ground. Plants thus inventoried will be managed to permit the US F&WS to make accurate evaluations as to their status.

The sensitive species, Uncompahgre Fritillary Butterfly (Boloria acronema) is under consideration for Federal designation and exists on the Forest. Its habitat is being studied by the Colorado Natural Areas Program. The species Braya humilus spp. Ventosa (no common name) is in need of special management according to Regional Direction.

During informal consultation, the U.S. Fish and Wildlife Service indicated the Forest Plan analysis should consider three additional threatened and endangered fish species. These species are: Colorado Squawfish, Ptychochellus lucius; Humpback Chub, Gila cypha; and Razorback Sucker, Xyrauchen texanus.

None of the fish have been found on the Forest and the identified occupied and historical ranges are far removed from the Forest.*

The three dams in the Curecanti project and the Collbran project are the main factors effecting water temperature which seems to be essential to spawning.

The three fish species are not affected by National Forest System management.

Management Indicator Species - Habitat requirements vary according to early and late forest succession stages. Early forest succession refers to plant communities that develop after harvest or removal of vegetation; for example, grass, forbs, or tree seedlings. Late forest succession refers to a stage in which trees are mature or overmature.

Certain wildlife species found in specific vegetation types have been selected to represent the habitat needs of a larger group of species requiring similar habitats. These are called management indicator species. The species selected for late forest or vegetation succession represent a smaller number of wildlife species with highly specialized requirements. Early succession species represent a large number of wildlife species which are more adaptable to early secondary vegetation. Table II-10 displays the indicator species and their habitat association.

Source: *Essential Habitat for Threatened and Endangered Species; David Langlois, 1978.

TABLE II-10.

ASSOCIATIONS OF MANAGEMENT INDICATOR SPECIES

Vegetative Type	Early Succession	Ab*	Late Succession	Ab*
Old Growth Spruce-fir	Elk	F	Pine Martin	U
Mature Spruce and Douglas-fir	Elk	F	Red Crossbill	A
Mature Lodgepole Pine	Elk	F	Hairy Woodpecker	F
Mature Aspen	Elk	C	Goshawk	F
Mature Ponderosa Pine	Mule Deer	C	Abert Squirrel	F
Mature Mountain Shrub	Elk	F	Lewis' Woodpecker	C
Late Succession Sagebrush	Mule Deer	A	Sage Grouse	F
Mature Pinyon-Juniper	Mule Deer	A	Pinyon Jay	C

* Abundance Code
A = Abundant: Observations of 25 per day usual in suitable habitat.
C = Common: Observations of 10 per day.
F = Fairly common: One or more observed per day.
U = Undetermined: Not enough information to classify.

The Forest planning process identified management indicator species. They represent the effects and influences of land uses on wildlife and fish. Table II-11 displays the Forest's management indicator species. Criteria used to select these species were:

--There were issues or concerns about the wildlife species and/or its habitat.

--The species is endangered or threatened, either nationally or statewide.

--The species has special habitat needs that may be influenced significantly by management practices resulting from land use allocation.

--The species are economically important and are commonly hunted, fished, or trapped.

--The species represents the habitat requirements of other species or groups of species.

TABLE II-11.

SPECIES AND THEIR SIGNIFICANCE TO MANAGEMENT AS INDICATORS

Species	Habitat Indicator Significance
Mule Deer	Economically Important
Elk	Economically Important
Bighorn Sheep	Economically Important
Rainbow Trout	Economically Important
Black Bear	Economically Important
Abert Squirrel	Special Habitat Needs
Pine Martin	Special Habitat Needs
Hairy Woodpecker	Represents Requirements for Other Species
Red Crossbill	Represents Requirements for Other Species
Goshawk	Represents Requirements for Other Species
Lewis' Woodpecker	Represents Requirements for Other Species
Sage Grouse	Represents Requirements for Other Species
Pinyon-Jay	Represents Requirements for Other Species
Peregrine Falcon	Threatened and Endangered
Bald Eagle	Threatened and Endangered
Colorado Cutthroat Trout	Threatened and Endangered

Demand for winter range will continue to be an important issue. As more critical big game winter range is lost outside the Forest boundary and the demand for deer and elk hunting increases, the Forest will be called upon to improve winter range quality and quantity. The quantity, quality, and location of habitat for bighorn sheep will need identified. Big game herd size is constrained, in part, by National Forest System winter range carrying capacity. The Forest will continue to cooperate with the DOW and will provide adequate wildlife habitat.

The Forest does not foresee a significant increase in big game populations due to the limiting factor which is winter range. Habitat improvement through vegetation treatment on National Forest will partially off-set habitat loss on private land due to changing land use such as subdivision, fencing orchards and mining exploration and development. These occuring and potential impacts on private land to deer and elk are real and are not controllable by land management agencies or the Colorado DOW.

As more human pressure is placed on National Forest summer range, the Forest will be looking at methods to improve it for wildlife. The largest number of elk harvested in the early big game season in 1982 occurred adjacent to some of the clearcuts in the Pieplant area of the Gnnison National Forest. Estimated current and projected wildlife populations of other species is located in the Statewide Comprehensive Plan. The Forest views big game trends to be slightly upward or close to current populations.

Fish - Riparian habitat is especially important for wildlife and fish. Problems exist in the riparian zone with livestock grazing and off-road vehicle use. There are currently 1,200 miles of streams inventoried as fisheries on the Forest.

A recovery program for the cutthroat trout has been coordinated with DOW. A habitat inventory is underway. Native stocking occurs on 18% of the lakes on the Forest. For all other species, the inventory of areas for designation of critical habitat is continuing.

Emphasis will be continued on improving productivity; identifying areas of unsuccessful stocking; reevaluating an areas need for restocking; and protecting riparian habitat.

Although a few high quality rivers and streams have self-sustaining brook and brown trout populations, most fisheries are heavily dependent on the State's fish stocking program. Federal fish hatcheries will be closing soon, including the National Hatchery at Lazear which provides trout for the Curecanti Project, three large impoundments on the Gunnison River. The Forest hopes the State hatcheries will try to fill the gap in reservoir stocking since reservoirs have heavier use by fishermen and are a greater attraction on a volume basis than streams. National Forest stocking will be depleted as a result of the declining hatchery base. As fishing pressure increases, specific fish habitats may become over used. The Forest will need to provide fish habitat in highly productive ponds and lakes. The Forest will continue to fulfill its responsibilities under the Endangered Species Act. As threatened and endangered habitat is identified the habitat will be protected. The Forest will continue to cooperate with the DOW and provide adequate fish habitat. Demand trends for dispersed recreation are displayed in the recreation section in this chapter.

Range

The Forest currently has 1,295,775 acres classified suitable and available rangeland. These areas support about 320,000 AUM's annually. About 50,000 acres have been identified to be in low ecological condition, producing less that 40% of its potential. Within classified wilderness areas, 23,000 AUM's are permitted on approximately 115,000 acres of suitable range. Grazing occurs in some municipal watersheds. Use is managed to assure water quality is maintained to acceptable standards.

Ecological range condition is the degree of similarity between the present community and the potential natural community for a site. Range condition considers only secondary succession. On many ranges, especially forested ranges, early and mid-seral stages of succession produce the largest amount and highest quality forage for livestock and big game.

Approximately 95 percent of the suitable rangelands on the three Forests included are in satisfactory condition. Through implementation of intensive grazing systems, installation of improvements, and changes in numbers and seasons over the past 30 years, nearly all rangelands are in a stable or upward trend. Management implemented through individual Allotment Management Plans could bring all rangelands to satisfactory condition by 1990.

The greatest potential for increasing forage production is the installation of new structural range improvements so that wild animals and livestock can use forage that is already present but not easily used. Vegetation treatment to change composition through nonstructural range improvements, also has potential for increasing forage production, but only about forty percent of the total potential than implementing structural improvements has.

There are 238 livestock grazing allotments on the Forest; 173 are cattle and horse allotments, 61 are sheep and goat allotments, and 4 are dual use. In 1982, 20 grazing allotments were classified vacant and are being evaluated as to future management. The overall trend of range condition is generally improving. All allotments are being managed under approved allotment management plans. Most existing management plans schedule use of intensive grazing systems.

Approximately 65,000 cattle, 5,300 horses and 61,000 sheep are annually permitted on the Forest under term grazing permits. The majority of the cattle are permitted on the Forest from mid May to mid October. The majority of sheep are permitted from mid July to mid September. Current use schedules 37,000 sheep AUM's, 280,000 cattle AUM's, and 3,000 horse AUM's.

Livestock grazing on National Forest System land is a vital part of the year-round operation of many area ranches. The Forest provides high altitude summer pasture that is important for the maintenance of mother cows and ewes, and for the quality of growth for calves, lambs, and yearling livestock. Most ranchers do not own sufficient rangeland for year-long livestock needs.

Private and Forest ranges are complimented in many instances by use on BLM rangelands during spring and fall. The Forest and BLM grazing permits are coordinated and written to provide for uniform flow of livestock from private land to spring BLM ranges, onto the Forest for summer and then reverse the cycle to private ranges for winter. Cooperative agreements have been developed between the two agencies to facilitate management of public and private rangeland used by the same permittees. Exchanges of administrative management of the public land range allotments are being initiated where they are beneficial. Currently the BLM provides for grazing of approximately 235,000 AUM's annually adjacent to the Forest. Through a cooperative agreement with the Soil Conservation Service, increased emphasis will be placed on coordination of resource planning in cooperation with the private landowner.

The Forest also cooperates with the DOW in joint financing of rangeland improvement projects which benefit both wildlife habitat and livestock grazing. These projects include improvement and construction of watering facilities and manipulation of brushland sites to improve diversity and forage production. Projects are being coordinated with other Forests, BLM, State, and private ownership where feasible to maximize benefits and reduce costs.

Future demand for grazing is expected to remain high and will exceed the available supply. Stocking on the Forest is within the estimated carrying capacity. Opportunities to increase grazing exist through vegetation treatment activities (forage improvement projects) and range structural improvements. Silvicultural activities, oakbrush management, and sagebrush control will benefit the range resource. Management practices will be initiated in allotments having range in low ecological condition.

Dependency on National Forest System land will increase as more private land is developed. Higher costs associated with feed lot operations will add to the dependency.

The Forest could sell all the AUM's it could provide. This would require additional investments to manage the forage resource. Table II-12 displays the livestock carrying capacity over the planning horizon.

TABLE II-12.

LIVESTOCK CARRYING CAPACITY

	Time Period					
	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
AUM's	497.2	497.2	501.7	503.1	501.2	496.2

Timber

Timber management on the Forest has not been a cost-efficient program in recent years when only considering the direct costs and revenues of selling trees. However, when all the other associated resource benefits are considered, a timber management program becomes a realistic and cost-effective management tool. The other resource objectives provide the impetus for a coordinated timber management program and in so doing improve the effectiveness of their own programs. Without a timber management program, many other resource management programs would cost a great deal more or could not be accomplished at all. In a sense, wood products are both an objective and a by-product of multiple-use management. Some examples of this concept follow:

--Wildlife and visual management goals depend on maintaining the presence of aspen species near present levels. Accomplishment of this goal requires that older stands be regenerated to a new stand of young trees before the aspen is replaced by other vegetation types through natural succession. Regeneration of the older aspen can be accomplished by burning or cutting down the existing trees. This permits new trees to develop from the root system of the burned or cut trees. Another management option is to designate the stands to be regenerated and offer the trees for public sale for utilization as firewood or sawlogs. Selling the trees can accomplish the same goal at a reduced or equivalent cost with the further benefit of returns to the U.S. Treasury.

--The skewed age class distribution towards an older, mature to over-mature forest makes the trees on the forest highly susceptible to insect and disease infestations. Direct epidemic control is an expensive, short-term solution. Silvicultural treatments through commercial timber sales offer an opportunity to provide long-term protection at a reduced cost and realize the additional benefits of the timber harvested.

--An additional benefit of changing the Forest's age class distribution from its present mature condition is the increase of early successional structural stages, an important habitat needed for many wildlife species. Since the advent of modern fire control, the most effective natural creator of early structural stages no longer provides an ideal structural balance. The balance of structural stages can be improved artificially by regenerating mature forests. Such changes in age classes are most efficiently accomplished with a commercial timber sale.

--The importance of water in the arid west is receiving increasing attention as demand increases substantially and the available supply remains relatively constant. It is well documented that vegetation treatment can increase water yields.* The opportunity for the largest increases occur in the subalpine forests from small clearcuts. The timber harvested from such openings can improve the cost-effectiveness of creating the openings.

Source: *"Watershed Management in the Rocky Mountain Subalpine Zone", Charles F. Leaf, USDA Forest Service, February 1975.

--The aesthetic beauty of the Forest is important to thousands of people who visit the Forest annually. Studies* of visual perception indicate that most people enjoy the appearance of a younger, vigorous, healthy forest over that of an over-mature forest with dead and dying trees evident to the viewer. A coordinated visual management/vegetation program can significantly enhance visual quality in scenic areas as well as provide wood products.

--Downhill skiing is a major recreational activity on the Forest. Forest vegetation is essential to a quality skiing experience because it improves snow retention and snow quality; it provides better depth perception; and it creates a pleasurable outdoor experience. An over-mature, decadent forest which is highly susceptible to devastating wildfire and insect epidemic is not a desirable condition. A younger, vigorous forest with a more balanced age class distribution provides the desired benefits at much less risk. A portion of the required vegetation treatment costs may be recovered by selling the resultant wood products.

--Dispersed motorized recreation is a very popular activity on many of the Forest's roads. As more people engage in this activity, the quality of the experience decreases. A coordinated timber management and travel management program offers the opportunity to enhance dispersed motorized recreation.

--A related resource management need is improved access for public firewood gathering. Much of the firewood along existing roads has been removed through public firewood programs. Improved Forest access as a result of resource management will substantially increase the available public firewood supply.

The timber resources are currently managed under two timber management plans. The Grand Mesa and Uncompahgre Timber Management Plan was approved on August 18, 1975. The Gunnison Timber Management Plan was approved November 13, 1975. Table II-13 displays the potential yield from the current timber management plans.

Source: *In proceedings, 1979 Convention, Society of American Foresters, October 14-17, 1979, Boston, Massachusetts, pp. 95-102.

TABLE II-13.

CURRENT POTENTIAL YIELD
(Average Annual)

Forest	Million Board Feet
Grand Mesa, Uncompahgre	16.83
Gunnison	18.11
TOTAL	34.94*

*Standard and Special Components Only.

The combined allowable sale quantity equals 35 million board feet (MMBF) annually. Timber harvesting is conducted on a regulated, non-declining basis. The average annual amount cut cannot exceed the long-term capability of the Forest to produce wood fiber. The current average annual programmed sales offered equals 28.8 MMBF.

Vegetation treatment through timber harvests are designed to achieve multiple-use objectives. These include insect and disease control measures, wildlife habitat improvement, range improvement, visual quality improvement, and water yield as well as wood fibre production. Approximately 500 acres are currently harvested annually through clearcut methods. The balance (4300 acres) is harvested through shelterwood harvest methods.

Timber harvest activities currently are conducted on land identified capable, available, and tentatively suitable. Approximately 37% of the Forest, 1,089,208 acres are classified tentatively suitable for timber production. The Forest is conducting inventories to identify the growth potential for capable, available, and suitable land. This inventory is scheduled for completion in 1985.

Table II-14 displays local mill locations and the percent of the Forest's timber they purchased between 1978 and 1980. The current mill capacity in the Forest's marketing area is approximately 42.5 MMBF.

TABLE II-14.

TIMBER MILL LOCATIONS

Mill Location	Percent of Timber Purchased Annually
Creede	2%
Crested Butte	1%
Cimarron	1%
Delta	8%
Montrose	63%
Norwood	2%
Paonia Area	3%
South Fork	20%

Five thousand three hundred acres were planted in fiscal years 1980 and 1981. Most of this acreage resulted from an accumulation of harvested areas not reforested. By 1984, this accumulation will be eliminated. During the period 1961-1981; 24,406 acres were planted on the Forest. Survival has averaged 40% to 60%.

Personal, free-use firewood cutting has been used to eliminate dead and down material left from past timber sales. Demand for free-use firewood is estimated at 9 MMBF per year and rising. Firewood is also available from green tree thinning, oakbrush management, and aspen stand treatment for wildlife habitat improvement.

Currently timber supply exceeds demand. This is due to the cyclic nature of lumber markets for softwood lumber. The demand for products such as house logs, poles, mine props, and fuelwood has increased in recent years.

The 1979 NFMA Regulation, under which the analysis is conducted, required that land suitable for timber production have a biological growth potential equal to or exceeding the minimum standard defined in the Regional Plan. The 20 cu.ft./ acre/year criteria was established in the Draft Regional Plan for this Region. This tentative direction was used in preliminary analysis for the Forest Plan to avoid unacceptable delays. The 20 cu.ft./ acre/year is only one of a range of biologic, environmental, and economic factors used to determine suitability for timber production. In fact, much of the land capable of producing 20 cu.ft./acre/year will not be managed for timber production. The 1982 revised NFMA regulations dropped the 20 cubic feet/ acre/year growth standard. As now stated, the economic suitability test is defined in 36 CFR 219.14(c) and (d) and depends upon the objectives of the particular alternative that is selected and approved as the preferred. This amendment will be incorporated in the next scheduled revision of the forest Plan as required by 36 CFR 219.29(b)(1). Table II-15 and Figure II-6 display land tentatively suitable for timber production.

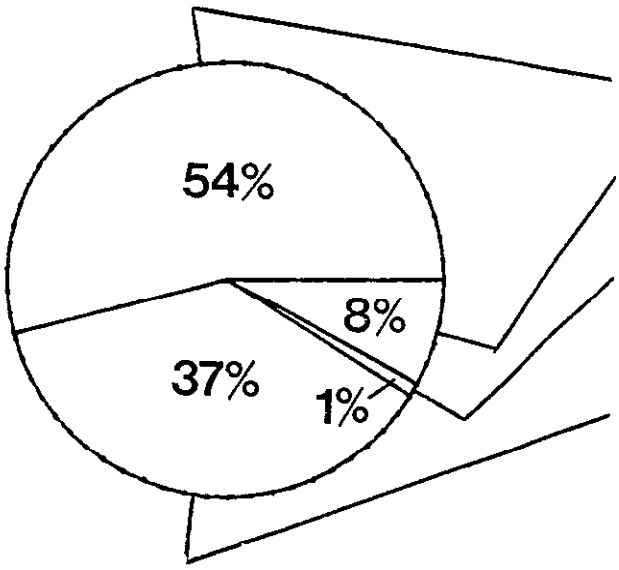
TABLE II-15.

LAND CAPABLE, AVAILABLE, AND TENTATIVELY SUITABLE FOR TIMBER PRODUCTION

Criterion	Classification	Acres
	Net National Forest Ownership	2,953,186
Minimum Biological Growth Standard (20 CF/Ac/Yr)	Water	15,199
	Non-Forest Land	715,907
	Forest Land	
	A. Not Capable (Less than 20 CF/Ac/Yr)	848,337
Legislatively or Administratively Withdrawn	B. Capable but not Available	
	1. Reserved.	
	Wilderness	213,249
	Research Areas	426
	2. Deferred.	
	Wilderness Study Areas	
	designated by Congress.	32,181
	designated by Administration.	0
	C. Capable and Available but not Suitable	
Lack of Technology	1. Technologically Not Suitable. Irreversible Soil or Watershed Damage	37,381
Administrative Allocation	2. Administratively Not Suitable. Experimental Forest & Administrative Sites	1,298
	D. Capable, Available and Tentatively Suitable Land	1,089,208

FIGURE II-6.

LAND TENTATIVELY SUITABLE FOR TIMBER PRODUCTION



(Total National Forest Area - 2,953,186)

	Acres
Area Not Capable	1,579,443
Area Not Available	245,856
Area Not Suitable	38,679
Area Capable, Available and Tentatively Suitable for Timber Production	1,089,208

The Forest contains 480,000 acres of aspen classified tentatively suitable forest land with an estimated sustained yield of 25 MMBF. A regular market for aspen products is unavailable at this time and consequently cannot be managed at its full potential. Aspen stands will convert to other forest types through natural succession if not regenerated. The various forms of vegetation treatment will offer the opportunity to reverse this trend in natural succession and be designed to achieve multiple use objectives. Utilization of the timber resource is also hampered by the lack of a large milling facility in the Gunnison area.

The timber resource is comprised of five predominant forest types. They are: Engelmann spruce-subalpine fir, ponderosa pine, lodgepole pine, Douglas-fir, and aspen. Blue spruce, bristlecone pine, and limber pine occur either as mixtures with or on the fringes of the predominant types in certain situations.

The increasing demands for multiple-use of National Forests, a reduced land base suitable for growing trees and increasing costs of producing forest products suggests the need to produce more high quality fiber per acre per year on a sound economic basis. One method of doing this is by utilizing sound genetic principles in all vegetation treatment activities. Genetic principles are incorporated into all silvicultural prescriptions to insure naturally regenerated trees are of the best possible quality. A limited tree improvement program has also been initiated on the Forest. This is expected to be an ongoing program to produce superior quality trees at relatively low cost.

Any vegetation treatment that improves the composition, condition, or growth increment of a forest stand may be considered timber stand improvement. In the context used here, timber stand improvement refers to treatments made on a non-commercial basis to improve present and future resource values. Resources that benefit from the Forest's timber stand improvement program include wildlife, visual management, insects and disease prevention, and timber management. Timber stand improvement is directed at pre-commercial thinning in regenerated stands, release and weeding in residual stands following over-wood removal, and pre-commercial thinning of overstocked natural stands. Dwarf mistletoe control is another timber stand improvement that has been receiving more attention in recent years. Stagnated lodgepole pine stands which are less than merchantable size could provide firewood opportunities for the Forest. These stands are typically rather old with very poor crown development and poor vigor. The ability of these stands to respond to thinning is very low.

In 1980, timber from State and private land supplied an estimated 2.5 MMBF to the local area. On State and private land there are about 93,261 acres of commercial sawtimber with a volume of over 750 MMBF. The potential yield is estimated at 3 MMBF annually.

National Resource land administered by the BLM comprises about 42,500 acres of commercial forest land with an estimated volume of 424 MMBF. The potential yield is estimated at 3.1 MMBF annually.

Efforts have been undertaken to coordinate timber resource activities with State and other Federal agencies to better meet public demand for fuelwood supplies, both for individual and commercial uses. Areas designated for free-use firewood gathering are being coordinated with the BLM and a joint news release issued to the public. This same action is being taken for Christmas tree sales to individuals.

The small sales program emphasizes wood product availability to local farms and ranches. This program is also beneficial by giving opportunity to the small family-owned wood producing business to enter and expand operations on Federal, State, and private commercial forest land.

A timber economic efficiency analysis was performed in accordance with NFMA regulations. The Forest's linear programming model was used to accomplish the analysis. Appendix E to the Final EIS displays timber economic efficiency analysis.

The analysis indicates that the economically efficient timber stands are those classified as spruce-fir, sawtimber size (greater than nine inches diameter at breast height), on less that 40% slopes, in fully roaded (3.5 miles/square mile) areas. The harvest method selected is the 3-step shelterwood system.

Demand for firewood will increase sharply. Demand for sawtimber is currently below supply. The Forest is in a market position similar to that of an individual producer in agriculture. Even a large change in timber output would not affect a change in market price. The Forest is currently facing a horizontal demand curve at market price levels. Demand for timber is estimated at 30-45 MMBF annually over the 50-year planning horizon. Table II-16 displays the timber demand on the Forest.

TABLE II-16.

TIMBER DEMAND*

	Time Period					
	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Million Board Feet Annually	40	40	40	40	40	45

*Demand estimates based on timber demand trends displayed in Final Regional Guide for timber 7 inches in diameter and greater from suitable timberland.

Water

The water yield from the Forest comprises an estimated 40% of the Colorado River flow at the Colorado and Utah border. Total mean annual water production is approximately 2.87 million acre feet. This is an estimated increase of 18,600 acre-feet per year (.65%) over the baseline water yield. (Baseline water yield is the runoff expected if all watersheds were in their natural pristine condition.) Past vegetation treatment through timber harvest, wildfire, prescribed burning, wildlife habitat improvement, and road construction has contributed to the increased water production.

The majority of runoff from the Forest results from snowmelt during April through July. It is estimated that over 75 percent of total annual runoff occurs during this period. The timing of peak flows varies considerably by elevation. At high elevations, where most Forest watersheds occur, streamflows are generally greatest from June through early July. At lower elevations, peak flows can occur as early as mid-April.

Water from the Forest is important for a variety of on-site and downstream uses. These include municipal, industrial, agriculture; instream flows for fisheries, recreation, wildlife; and for meeting delivery obligations to Mexico set by the United States - Mexico Water Treaty of 1944.

The maximum water yield increase potential by the year 2030 is estimated at 125,000 acre feet per year over current levels. Most of this potential is a result of vegetation treatment and snowpack management. Snowpack management in nonforested areas, such as snowfencing on alpine ridges, provides potential for increasing water yields. The estimate of potential increases from vegetation treatment was based on the following assumptions:

--All tentatively suitable forest land with slopes less than 40% is assumed capable of vegetation treatment for water yield increases.

--Approximately one-third of the tentatively suitable forest land with slopes greater than 40% is assumed capable of vegetation treatment for water yield increases.

--Approximately one-third of non-forest land with slopes less than 40% is assumed capable of snowpack management for water yield increases.

--Wilderness acreage is excluded.

The water yield increase potential for the Forest through timber harvest is estimated at 67,000 acre-feet per year over current levels. This estimate is based upon the following assumptions:

--Potential for increasing water yield is limited to forest land with stocking levels sufficient to be capable of commercial timber production in 50 years. Non-forest land is eliminated from this calculation.

--Potential for increasing water yield is limited to aspen, spruce-fir and lodgepole pine. Clearcuts for water yield increase are incompatible with the silvicultural requirements of ponderosa pine. The extent of other forest types on the Forest is negligible.

--Potential for increasing water yield through timber harvest is limited to slopes less than 40% by economic and environmental considerations.

--Wilderness acreage is excluded.

In the past vegetation treatment has given little consideration to cumulative impacts on the water resource. Water yield increases have been incidental to rather than an objective of the action. If that trend were to continue, total water yield increase would only be 182,600 acre-feet over current levels, or an average of 3,650 acre-feet per year. Also in the past, analysis of water quality impacts has been on a project by project basis. Cumulative impacts of several projects have received little consideration.

An estimated 95% of the water flowing through the Forest meets quality standards. Water not meeting standards is affected by toxic metallic pollutants from past mining activity, sediment from road construction, grazing in riparian areas, and timber harvest.

Water quality goals can be met by:

--Treating the watershed restoration needs as funds become available.

--Increasing attention to riparian areas in range management plans.

--Coordination with state and local agencies.

--Planning silvicultural activities, road construction, and other management activity on a watershed basis to prevent excessive sediment production.

Water quality sampling continues to monitor the success of the measures described above. Sampling is also conducted to define the nature and extent of other potential problems that may occur with increasing development, such as those associated with acid rain precipitation.

Numerous water collection, storage, and distribution systems exist within the Forest boundary. Requests for further water development will continue to be processed according to State water law and Forest's permitting process.

The importance of the water resource will increase greatly in future years. Runoff from this area is critical to the water supply of the southwest United States where much of the water generated on the Forest is used. There is an increasing demand for water on the western slope. New industries also require additional water.

The question of how much additional water could be produced on the Forest depends on the demand for, value of, and the cost of providing the additional water. Other resource values and public desires must be considered. Though agriculture (with a low marginal value for water) currently uses the majority of water, shifting economic structures may change the demand for and value of additional water. Economic principles do not operate freely to determine the price of water, especially "new" water. This is due to the complicated nature of the laws and customs governing water use and distribution in the Colorado River Basin. The revenue generated for increased water is not an accurate gage of its value to society. No determination can be made with available information as to a desirable level of water augmentation on the Forest. However, by modifying existing vegetation treatment practices at very low cost, the opportunity exists to more than double the rate of water yield increases. This can be achieved while maintaining the minimum standards and guidelines for protecting and managing all other resources.

Minerals and Geology

Satisfying demand for locatable minerals is the responsibility of the mining industry. Public domain land is available for mineral exploration and development under all applicable laws and regulations. For leasable minerals the Department of Interior leases tracts for development by the mining industry. Saleable minerals are the only type of mineral commodity for which the Forest can directly affect the supply by selling materials to individuals and private industry.

Limits on the time available for staking and validating claims and obtaining leases in designated wilderness are established in the 1964 Wilderness Act. The Act provides that the United States mining and mineral leasing laws apply within wilderness areas until midnight December 31, 1983. Effective January 1, 1984, wilderness areas are withdrawn from mineral entry. This withdrawal is subject to valid claims and existing leases. Valid claims and existing leases on the withdrawal date are still available for further exploration and development. Claims that lack discovery by the above date will be void.

After midnight December 31, 1983, new leases will not be available in wilderness areas. Leases obtained within wilderness or wilderness study areas prior to the above date will be subject to lease stipulations designed to protect the wilderness environment. These are included in the appendices accompanying the Plan. In the case of coal leasing, wilderness designation of the study area will preclude coal leasing. This is subject to existing rights. Under non-wilderness designation, the question of suitability or unsuitability for coal leasing will be determined by applying BLM's unsuitability criteria.

Oil and gas deposits within no surface occupancy areas could be recovered through directional drilling or other techniques which will not disturb surface resource values. Where timber management direction is applied on no lease areas, lease will be recommended under the limited surface use stipulation.

USDI, Bureau of Land Management, is the responsible agency for the Environmental Analysis of proposed operations on mineral leases. Cooperation with the BLM insures that data developed in the Forest planning process is available for their analysis.

Forest Service policy toward mineral activities on National Forest System lands is guided by statutes and expressed in regulation; in statements of the President, the Secretary of Agriculture and the Chief of the Forest Service; and in the Forest Service Manual.

Minerals are fundamental to the Nation's well-being. The National Forest System, by coincidence of geology and geography, is a principal storehouse of mineral and energy resources. The search for and production of minerals and energy resources are statutorily authorized uses of the National Forest System, except for those lands formally withdrawn from mineral activities by Act of Congress or by Executive authority. Mineral activities on National Forest System lands are encouraged in accordance with the National Mining and Mineral Policy Act, the Acts governing mineral disposals from National Forest System lands and the various applicable Federal and State statutes governing protection of the environment, including air and water quality.

The Forest Service objective is to manage minerals related activities in a timely manner, consistent with multiple-use management principles, and to integrate the exploration, development, and production of mineral and energy resources with the use, conservation, and protection of other resources.

Statutory and regulatory direction separate mineral resources in lands owned by the United States into three categories: locatable, leasable, and salable.

Locatable minerals are those valuable deposits subject to exploration and development under the U.S. General Mining Law of 1872 and its amendments. Commonly, locatables are referred to as "hardrock" minerals. Examples include, but are not limited to, deposits of iron, gold, silver, lead, zinc, copper, and molybdenum. Citizens, and those who have declared their intent to become citizens have the statutory right to explore for, claim, and mine mineral deposits in Federally-owned lands subject to the U. S. Mining Laws, including those of the National Forest System. Through a memorandum of understanding with the Bureau of Land Management (BLM), U.S. Department of Interior, the Forest Service administers most aspects of operation of U.S.

Mining Laws on National Forest System lands. In addition, under the regulations in 36 CFR 228, the Forest Service approves exploration and mining operating plans and administers those operations to ensure protection and reclamation of affected surface resources.

Federally-owned leasable minerals include fossil fuels (coal, oil, gas, oil shale, etc.), geothermal resources, potassium, sodium, carbon dioxide, phosphates, and sulphur in New Mexico and Louisiana. These minerals are subject to exploration and development under leases, permits or licenses granted by the Secretary of the Interior. The controlling statutes currently are the Mineral Lands Leasing Act of 1920 and amendments, the Mineral Leasing Act for Acquired Lands of 1947, and the Geothermal Steam Act of 1970, whichever applies to the particular resource. The Secretary of the Interior's authority is administered by the Bureau of Land Management. When National Forest System lands are involved, the BLM requests the Forest Service's recommendation for minerals, other than coal, subject to the 1920 Act, or the Forest Service's consent decisions for minerals subject to the 1947 and 1970 Acts and for all coal deposits. Forest Service recommendations for and consent to the BLM for leasing, permitting or licensing except for coal include appropriate stipulations to be included in the issued license, permit or lease for the management of surface resources. The Secretary of the Interior, through the Office of Surface Mining (OSM) for coal and through the Bureau of Land Management for other minerals has the authority to administer operations on National Forest System lands leased, licensed or permitted under his authority.

Prior to approval of operating plans, the Forest Service participates with BLM or OSM in the formulation of the site-specific terms and conditions of operating plans so that the plans provide appropriate mitigation measures to insure that adverse impacts on surface resources will not exceed applicable environmental protection standards. Plans must be designed to minimize the impacts of operations on other uses and surface resources, and to provide for prompt reclamation or restoration of affected lands upon abandonment of operations.

Section 308 of the 1983 Appropriations Act prohibits the expenditure of funds for processing or issuing lease applications in wilderness, RARE II proposed wilderness, further planning areas, and congressionally designated study areas, with certain exceptions. One notable exception pertains to the border areas of National Forest Wildernesses: funds may be used to issue oil and gas leases for the subsurface of such areas if they are immediately adjacent to producing oil and gas fields or areas that are prospectively valuable. Such leases shall allow no surface occupancy.

Salable mineral materials, or common varieties, are generally low value deposits of sand, clay, and stone that are used for building materials and road surfacing. Disposal of these materials from the National Forest System is totally at the discretion of and by the Forest Service. Requirements controlling salable mineral material operations are similar to those for leasable minerals.

Mining has played an important role in the planning area. The Colorado Mineral Belt crosses the Forest. It has produced zinc, lead, gold, silver, copper, and cadmium. Uranium and vanadium are produced from the Uravan Mineral Belt that lies immediately south of the Uncompahgre Plateau. Large deposits of

molybdenum have been discovered.* Much of the Forest has been rated by the U.S. Geological Survey having moderate to high potential for oil and natural gas. Bituminous coal exists adjacent to and in the Forest in the Grand Mesa Coal Field, Delta and Mesa Counties; and in the Cimarron Ridge area; Montrose, Ouray, and Gunnison Counties. Low grade oil shale deposits occur within the Forest boundary.

The Forest encourages environmentally sound energy and minerals development. It emphasizes oil, gas, and mineral exploration and development outside wilderness areas. Emphasis is placed on timely processing of mineral proposals. Equal emphasis is placed on refinement and improvement of procedures to protect surface resources, while permitting the exploration for and extraction of mineral resources.

Most past and present metal production has been from mining districts in Gunnison, Ouray, San Juan, and eastern San Miguel Counties. Current production is mainly zinc, lead, gold, silver, copper, and cadmium from deposits in the Ouray - Telluride - Silverton triangle. Smaller quantities have been produced from the adjacent Ophir and Mount Wilson mining districts in San Miguel county. Gunnison county has several mining districts, including Elk, Gold Creek, Gothic, Pitkin, Ruby, and Tincup. These areas have produced gold, silver, copper, lead, and zinc. No current metal production is recorded from Gunnison County but exploration is being conducted north and west of Crested Butte. Interest in molybdenum has been generated by the Mount Emmons discovery near Crested Butte in 1977. Favorable geology and demand for metals indicate that the planning area will be intensively prospected in the future.

Production in recent years has occurred at the Blue Ribbon Coal Mine, Coal Basin Coal Mine, Homestake Pitch Project, Mount Gunnison Coal Mine, and the Somerset Coal Mine.

Approximately 40% of the Uncompahgre Plateau is currently leased for oil and gas. Over 90% of the Grand Mesa National Forest and the Paonia Ranger District north of the West Elk Wilderness on the Gunnison National Forest have been leased for oil and gas. Minor portions east of the West Elk Wilderness on the Gunnison National Forest have been leased for oil and gas. These are existing commitments and rights granted for mineral development. Some exploration drilling has occurred.

Five geothermal leases have been issued: four on the Gunnison National Forest, and one on the Uncompahgre National Forest. These leases cover 9,267 acres. No drilling has been done to date.

Seven hundred and fifty five thousand, eight hundred and sixty two acres have been identified having "high" to "moderate" suitability for coal leasing. Two hundred and twenty four thousand, four hundred and ninety one of the suitable acres, were classified unsuitable for coal leasing. Appendix F details the unsuitability assessment for coal mining using the BLM's unsuitability criteria.

Source: * Mount Emmons Mining Project Final EIS, October 1982.

The planning area produced $101,243,955 worth of minerals in 1978. Coal was the most valuable output, followed closely by uranium and vanadium. Table II-17 displays the production breakdown by type of mineral.

TABLE II-17.

MINERAL PRODUCTION SUMMARY

Mineral	Production Dollars
Coal	40,336,832
Oil and Gas	6,722,866
Base and Precious Metals	18,709,594
Uranium/Vanadium	30,561,837
Sand and Gravel	4,912,826
TOTAL	101,243,955

The demand for mineral commodities fluctuates with economic and technological conditions. The Forest does not directly satisfy minerals demand, but the planning process must consider demand factors. Areas where there is high potential for a mineral resource with a favorable demand outlook should expect an increase in mineral exploration activity. This activity increases the chance of major mineral development.

Increasing demand for mineral resources will accelerate population growth. This growth must be monitored and considered in terms of its impacts on Forest uses and renewable resources.

Human and Community Development

The Forest is currently operating five major manpower programs which provide employment, skill training, experience, and education for a wide range of age groups interested in natural resource management. Manpower programs provide a valuable service to the Forest and at the same time fulfill a U.S. Department of Agriculture commitment to serve the unemployed, underemployed, minorities, and economically disadvantaged youth and elderly through related forestry activities. The following programs exist on the Forest:

--Youth Conservation Corp (YCC). Although YCC is not currently functioning as a Human Resource Program due to limited funding, it has played an active and important role in past years.

--Senior Community Service Employment Program (Older American). The Older American Program, being quite active on the Forest, employs 15 part-time elderly persons whose incomes are within poverty level standards.

--Volunteers. Because individuals participate in this program without compensation numbers of volunteers actively participating at any one time varies substantially. Campground hosts and trail maintenance duties are popular volunteer projects on the Forest.

--Comprehensive Employment and Training Act (CETA). This program has been reduced. It is doubtful the Forest will be able to host the enrollees of the various titles of the Act.

--College Work Study. This cooperative program is one which the Forest has supported within the limits of its funding capacity.

All participants benefit from the manpower programs. The enrollee receives income and training or employment opportunities that are not otherwise available. A program review for 1979 and 1980 indicates a substantial involvement and commitment on the Forest's part.

The outlook for manpower and youth training programs on the Forest is not encouraging. Many of the programs are Federally funded, with monies coming from other Federal agencies. The Forest's participation is determined primarily by national economic conditions and the political climate.

SUPPORT ELEMENTS

Protection

The protection support elements include fire, forest pest management, animal damage control, law enforcement, and air quality monitoring.

Fire - The current fire management program is based on resource protection from fire through fire prevention, presuppression, and fuel treatment. The overall fire management objective is to provide a cost-effective program which responds to land and resource management goals and objectives. The wildfire suppression objective is to confine each wildfire so that management objectives may be met at reasonable costs. The management program is a coordinated interagency effort involving Federal, State, and local governments. Wildfires have periodically burned large areas of the Forest. These fires have had an important effect on the type, composition, age, quality, and growth rate of the various vegetation types. Analysis indicates that, on an average, 51 fires burn a total of 291 acres annually on the Forest. Approximately 43% of the fires are human caused. Recent trends indicate an increase in man-caused fires and acres burned. Table II-18 summarizes the fire statistics for a "Level 1" fire management analysis for the Forest through the 1971-1980 period.

In 1979, a study was made of four other National Forests in the Rocky Mountain Region to determine their most cost-efficient level of fire protection. The intent of the study was to find the level of budgeted fire protection funding which would result in the lowest total cost of protection, suppression, and resource damages. A comparison of vegetation types was then made to extrapolate the results of this study for application to other National Forests in the Region. This comparison indicated that annual expenditures of $210,000 (1979 dollars) for fire prevention, detection, manning, equipment, and fuels treatment should result in the least total cost for fire protection on the Forest. In recent years, the Forest's protection program has not been fully funded to the level indicated above. This may account in part for some of the increase in the number of man-caused fires and acres burned as noted in Table II-18.

Fuel treatment to reduce fire hazard has been largely accomplished in connection with vegetation treatment (silvicultural) activities. This includes removing old growth, salvaging dead and down material, slash cleanup for firewood, and prescribed burning to reduce fuel hazard. Vegetation treatment through prescribed burning is also being used extensively for range and wildlife habitat improvement programs.

TABLE II-18.

FIRE STATISTICS
(1971-1980)

Year	Costs			Acres Burned	Total Number Fires
	Total FFP* Budget	Suppression	Total Fire Program		
1971	36,000	8,000	44,000	37	41
1972	73,000	72,000	145,000	53	45
1973	80,000	60,000	140,000	107	24
1974	75,000	112,000	187,000	472	77
1975	72,000	162,000	234,000	55	35
1976	52,000	40,000	92,000	313	50
1977	157,000	120,000	277,000	206	54
1978	137,000	88,000	225,000	488	78
1979	119,000	148,000	267,000	112	50
1980	217,000	394,000	611,000	1062	53
Average 1971-1980	101,400	120,400	222,000	290	51

*FFP=Forest Fire Protection

The use of prescribed fire to achieve Forest resource management objectives, will continue to increase as more information is gained through research, monitoring and analysis of the physical, biological and economic effects of fire. Fire risk and some increase in the number of man-caused fires can be expected as development and visitor use increases. The fire prevention program including closures, regulated use and public education will require more emphasis with expected population growth.

Forest Pest Management - The most prevalent insect pests on the Forest are the Engelmann spruce bark beetle, mountain pine beetle, and the Western spruce budworm. There have been serious outbreaks in the past. Currently, mountain pine beetle is causing resource loss on the Uncompahgre Plateau. This epidemic is being controlled by salvage sales.

Current state of the art provides techniques for risk rating stands to establish priority for treatments. These methods will be incorporated in future inventory programs.

Dwarf mistletoe continues to be a problem predominately in the lodgepole pine and to a lesser degree in ponderosa pine. Dwarf mistletoe in lodgepole pine is being reduced by removal of the infested trees using vegetation treatment activities such as timber stand improvement, sales, and destruction of unmerchantable infected stands. Where necessary stands are regenerated using natural or artificial reforestation methods. These practices will continue throughout the planning period.

Controlling mountain pine beetle may require one or a combination of direct chemical treatment, timber harvest, and timber stand improvement. While the short-term objective is to reduce beetle populations and subsequent tree mortality, the ultimate goal is to create a mosaic of tree age and size classes and to increase species diversity.

The Forest's timber management program in past years has not been at a sufficient level to apply the stocking control and harvesting of mature timber necessary to maintain healthy, vigorous stands. As a result of this lack of silvicultural treatment, many areas on the Forest are susceptible to epidemic insect populations. A large portion of the forested vegetation is overmature and considered highly susceptible to insects and disease. At the present time, the lodgepole pine stands which became established near the beginning of the twentieth century are the most susceptible.

The predominance of mature timber stands on the Forest provides conditions suitable for a number of other diseases such as broom rusts, decaying agents, and cankers. While none of these cause unacceptable losses Forest-wide, they have a significant impact in sensitive areas such as ski areas and campgrounds.

Animal Damage Control - Animal damage control is conducted primarily on sheep allotments to reduce coyote predation. The United States Department of Interior, Fish and Wildlife Service is as the agency authorized to conduct animal damage programs on Federal land as approved by the Forest Service.

Request for predator control are made to the District Ranger by grazing permittees. An evaluation of the losses is made to determine whether control is justified. If action is warranted the type of control, location, and duration of control measures is agreed upon by the Forest Service, Fish and Wildlife Service, and the DOW. These agreements are made on an annual basis.

Emergency control measures, not covered by an agreement, are handled on a case by case basis. The agency responsible for control assumes the responsibility for actions giving early notification to the other agencies.

Law Enforcement - The responsibility for law enforcement rests primarily with the individual county sheriffs. Additional support comes from the Colorado State Patrol and DOW.

Generally, law enforcement problems on the Forest have been minor. Violations are associated with timber trespass, off-road vehicle use, and fire laws. The number of violation notices issued has remained static the last few years.

The Forest has entered into, or participates with adjoining Forests, cooperative law enforcement agreements with all of the counties containing Forest land. The counties involved include Delta, Garfield, Gunnison, Hinsdale, Mesa, Montrose, Ouray, Saguache, San Juan, and San Miguel.

Air Quality - Air quality over most of the Forest is good. The main source of pollutants from Forest activities are, and will continue to be, suspended particulates from wildfire and prescribed burning. Present and imminent external sources of air pollution are associated with dust from roads and exhaust emmissions from internal combustion engines.

Through the "Prevention of Significant Deterioration" provisions of the Clean Air Act (42 USC 1857, et seq.), Congress has established a land classification scheme for areas of the country with air quality standards. Class I allows very little additional deterioration of air quality; Class II allows more deterioration; and Class III allows still more. All areas of the Forest are currently classified Class II, except portions of the West Elk Wilderness and the La Garita Wilderness, which are Class I areas.

Pest control in forest stands is managed to meet long-range objectives through silvicultural practices; particularly harvesting, planting, and utilization practices. Biological, chemical, mechanical, and prescribed burning are considered for epidemic conditions.

Future energy related developments and associated population growth are expected to have a detrimental effect on air quality.

Lands

Forest land use and occupancy is authorized by special use permits, easements, memorandums of understanding, leases, and other agreements. Over 850 special use permits authorize uses such as pasture permits, utilities, ditches and reservoir, and roads. There are 88 existing utility permits with 565 miles of corridor on the Forest. There are four existing electronic sites for commercial and individual uses. Greyhead and Mesa Point are proposed electronic

sites for four commercial companies. The Forest has 10 electronic sites for its communication needs. The Forest Service is responsible for managing the surface resources. The Department of Interior is responsible for managing the mineral estate.

Applications for special uses are processed in the order received. In the past five years, special uses which solely benefit private parties have been given low priority for action. Recreation residence permits, although no longer granted, exist on the Forest. The Forest planning process identified no higher resource use for summer home areas for the next 20 years.

Land owned by others within and adjacent to National Forest System boundaries may affect management of and control access to National Forest System land. Location and delineation of the property boundary is necessary for effective land management, and to identify and prevent encroachments and unauthorized use. To date, 2,130 corners and 81.5 miles of boundary have been posted and marked.

Bureau of Land Management activities within and adjacent to the Forest include timber harvest, grazing domestic livestock, wildlife habitat and other natural resource management. These activities are comparable and in most instances compatible with the management activities conducted on National Forest System land.

Landownership Adjustment - There are 210,217 acres within the Forest boundary in other ownerships with about 150,000 acres of mineral patents. The landownership pattern and use is complicated and management of small National Forest System parcels is ineffective and inefficient. Ownership changes occur through land exchange, fee purchase, and acquisition of specific rights through easements. Currently, the Forest may only dispose of property through exchange and the townsite authority. Regulations are currently being written to implement disposal through the Small Tracts Act.

The Forest has purchased 735 acres through the Land and Water Conservation Fund Act (L & WCF). There are about seventeen hundred acres of private and/or State-owned land in the existing wilderness areas. Land exchanges will be used to adjust ownership instead of using the L &WCF programs. Current land exchange proposals include 590 acres of offered lands and 590 acres of selected lands.

Forest landownership adjustments are coordinated with the plans and programs of other Federal agencies and State and local governments. Both private and government interest in landownership adjustment is expected to increase from the present level. The Forest Service and BLM Jurisdictional Land Transfer Program is included in Appendix L.

Land ownership adjustment proposals from private and government agencies are expected to increase in the immediate future.

Withdrawals and Revocations - A withdrawal is an action restricting land use and segregating the land from availability for mineral uses. A review and assessment of existing withdrawals is required by the Federal Land Policy Management Act 1976. The procedure requires coordination with the BLM and the U.S. Geological Survey.

Future management is likely to favor fewer withdrawals from mineral entry. Subject to valid claims and existing leases; after December 31, 1983; wilderness designated by the Wilderness Act of 1964 will be withdrawn from mineral entry and mineral leasing. The Forest does not anticipate new withdrawals for specific administrative sites or other investments (such as new recreation sites). Existing surface management regulations adequately protect other resources, in most cases eliminating the need for other formal withdrawals.

Rights-of-Way Acquisition - Non-federal land within and adjacent to the Forest has resulted in management problems that are becoming more critical as demand on public land increases. Areas of the Forest are isolated. Access to and within the Forest for general public use is a public issue. The top priority cases are rights-of-way for timber sales. Condemnation has been used sparingly but may be used more if needed.

Future demand placed upon most of these activities is expected to accelerate throughout this decade as resource management intensifies. The public demand for access will increase as population increases. Resistance to grant public rights-of-way is likely to also increase.

Soils

Soils are highly variable regarding the degree of development and source of parent material across the Forest. Generally, soils have developed out of parent material of granite, schist, sandstone, shale, limestone, conglomerates, and glacial deposits and are low to moderate in fertility. In certain areas, a heavy clay subsoil causes soil slippage with or without any surface disturbance.

The Forest soil supply is essentially fixed, renewing itself by the slow weathering of bedrock over periods of several hundred years. The role of soils management is to conserve this fixed supply of soil by minimizing erosion. This is accomplished by inventorying soil characteristics, monitoring the use of other forest resources, and providing mitigation measures for reducing erosion.

Soils management does not produce outputs when output is defined as goods, services, and products which are purchased, consumed, or used directly by people. However soil is a critical component in the production of timber, range, and forage; as well as general forest vegetation. Soils management is one factor in determining whether that production will increase, remain constant, or decrease over time. Soils management is a support element for the resource elements which produce outputs.

An important factor in determining soil erosion potential for an area is the degree to which that area is cleared of vegetation by other resource development activities. In general development will cause greater soil erosion than preservation when applied to an area. The level at which soil erosion will occur during the 50-year planning horizon is directly related to the management emphasis of an area.

Little current data is available on which to base soil erosion calculations. As surveys are completed, soil erosion losses will be calculated using the Universal Soil Loss Equation.

A soil resource inventory for the Forest is scheduled to be completed by 1989. Slightly over two million acres remain to be inventoried.

Continuing public concern will require increased management emphasis on maintaining soil productivity.

Facilities

The Forest has 3,874 miles of road. Of this, 1,240 miles are classified arterial or collectors and 2,634 miles are classified local roads. There are eight forest highways that are part of the State Highway System which access and cross the Forest.

New regulations governing Forest Highway administration and construction went into effect April 12, 1982. A preliminary list of Forest roads which meet the criteria for designation as potential Forest highway projects is displayed in the accompanying Plan.

The arterial and collector road system is essentially in place. Many miles need upgrading or reconstruction, but the corridors are well established.

About 35 miles of road are constructed or reconstructed annually. Currently the Forest provides the minimum road facilities needed to safely accomodate the expected type and volume of traffic.

County road departments maintained 1,475 miles in 1982 under cooperative agreements. Counties are also facing funding constraints and are reluctant to add to their maintenance load. Delta County discontinued cooperative maintenance of Forest roads in 1981.

Areas where indiscriminate off-road driving results in unacceptable erosion or esthetic impacts, and areas where traffic is legally prohibited are closed to off-road vehicle use. Roads are managed to achieve the maximum public good with the available budget. Some roads are closed to protect wildlife values, prevent resource damage, and reduce road maintenance costs. The present travel management status is displayed on the Forest Travel map. This map is available at Forest Offices.

Local roads constructed solely for timber access in the last four years (1978-1981) have been closed by gate and sign. The closures were determined on a project level basis considering resource needs, traffic volume, cost effectiveness, and maintenance capability. Management options for roads are open, restrict, close, or obliterate and rehabilitate. Few existing roads outside of timber sale areas have been closed.

Local roads are being constructed primarily by timber and mineral resource activities. The mileage needed for oil and gas development is presently unpredictable. Most of the activity is in the exploration stage.

Administrative facilities on the Forest include office buildings, work centers, and other service and storage facilities. A total of 98 buildings are owned by the Forest. Many of the buildings are functionally obsolete, with 61% of the buildings 30 years old or older. The buildings are structurally adequate but are deficient from a functional, mechanical, electrical, or energy efficient standpoint. At a rate of 2-3 buildings per year, it would require 18 years to replace those constructed prior to 1940.

The Forest is responsible for 18 dams owned by the Forest Service, 81 bridges, 63 water systems, and 2 waste water and treatment plants. In addition the Forest administers special use permits for 230 dams and 241 ditches and canals. The Forest does not have any solid waste disposal sites. There is one proposal pending for a sanitary landfill near Lake City. The proponent is currently studying several options and has not formally requested a site from the Forest. One option is on National Forest System land. Proposals will be handled on a case-by-case basis through the environmental analysis process. Mitigation measures will be considered.

The Forest has one aerated lagoon currently in operation. No new facilities are planned. Proposals will be handled on a case-by-case basis through the environmental analysis process. Mitigation measures will be considered.

Travel Management - Road use by people, rather than the actual road itself, causes greater impacts on the environment and on other resource uses and activites. Travel management provides direction on managing the use of existing and future roads. Travel management is a combination of managing road and trail use, and area use.

The travel management plan delineates roads and trails that are open, closed or restricted either seasonally or by motorized vehicle type. Wilderness areas, research natural areas, and special interest areas are closed to all motorized vehicles. Major arterial and collector roads are usually open with the exceptions of seasonal or wet weather closures to protect the road investment and reduce resource damage such as erosion and siltation. Where roads are within restricted travel management areas, they would remain open for access to private land or multiple-use activities. These activities can include logging, firewood access, reservoir administration and hunter access. Roads may be closed in a restricted area to further enhance wildlife seclusion, prevent unacceptable resource damage, avoid high hazard locations, or to reduce maintenance costs. All single purpose, newly constructed, local roads are closed. Roads in open areas may be either open or closed based on the same criteria used above for roads within restricted areas. Additional considerations to those criteria are:

--Four-wheel drive recreation roads which are designated in the Forest transportation inventory should remain open.

--Roads should usually remain open within areas that have the following management emphasis:

a) Semi-primitive motorized recreation

b) Roaded-natural recreation

c) Wildlife habitat management but with a semi-primitive motorized recreation opportunity

Seasonal closures are used where resource damage or road investment may be mitigated with such a closure.

Roads and trails are open, closed or restricted based on management goals of the area through which they pass, the land's characteristics, and the prevention of unacceptable resource damage. Additional closures may occur due to insufficient maintenance funds. At that point, priorities have to be set (based on traffic volume, resources served and public needs) to maintain selected roads with available maintenance dollars.

Orders designating some trails as closed to motorized trail vehicles are in effect. Monitoring of existing uses and resulting impacts on resources may require additional closures on some trails. By information displayed on recreation maps, travel management guides, and signing at the trail locations the public will become acquainted with the legal definition of a trail vehicle (i.e. less than 40 inches in width). An impact is occuring more recently with the development of increasing popularity for 4-wheel and 3-wheel all terrain vehicles which are by definition (less than 40 inches) a trail vehicle. These vehicles track width do not coincide or fit traditional trail tread width. Thus a safety and resource damage problem has occured which may be mitigated by information processes, but cannot be legally enforced without a change in the definition of a trail vehicle in the Code of Federal Regulations. Trails for motorized trail vehicles will safely accomodate "two wheel" trail vehicles.

Area Management - The travel management plan delineates areas as open, closed or restricted to many different modes of travel. Wilderness areas, research natural areas, and special interest areas are closed to all motorized vehicles. Areas that have the following management emphasis: developed winter and summer recreation sites; utility corridors and electronic sites; semi-primitive non-motorized recreation opportunities; and wildlife habitat; were placed in a restricted travel class (i.e. no off road travel) in the initial planning stages. Other considerations are also examined. These considerations are:

--The physical and biological characteristics of the land. These characteristics include: slope steepness; soil erodibility; vegetative cover - recovery potential; previous experience with resource damage occuring; wildlife and fisheries protection; proximity to streams relating to increased sedimentation and other unacceptable resource damage such as visual.

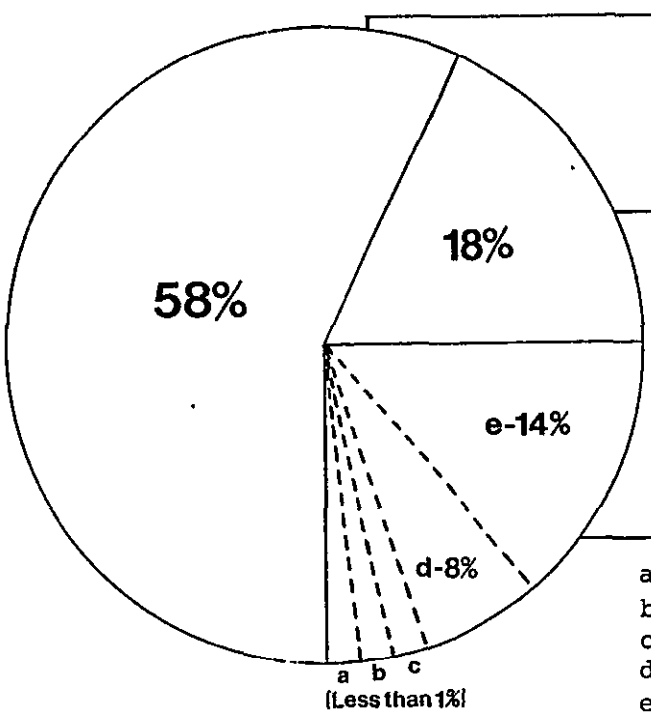
--Administrative and management concerns. These concerns include: making management areas large enough for efficient and effective law enforcement and administration; achieving a balance of recreation opportunities such as semi-primitive non-motorized and semi-primitive motorized within land characteristics delineating area boundaries on a map that are easily discernible by the public such as streams, roads, ridge tops, for effective understanding and cooperation of the public; and achieving consistency between ranger district boundaries, National Forest boundaries, and adjacent lands and agencies such as BLM.

All of these considerations are blended to arrive at the travel management plan. Continued monitoring of the travel management plan is necessary to re-evaluate and assess on an annual basis the attainment of this goal. Yearly adjustments will be made to the travel management plan. It is important for the public to assist the Forest Service by providing information as to specific problems or resource degradation occurences. In summary, the objective of effective travel management is to provide a safe, environmentally sound, and efficient transportation system. Figure II-7 displays the acres open, closed, or restricted to motorized vehicle use.

FIGURE II-7.

TRAVEL MANAGEMENT

(Total National Forest Area - 2,953,186)



	ACRES
OPEN	1,725,946
CLOSED	517,898
RESTRICTED	
a. Closed to Snowmobiles	12,846
b. Special Orders	13,419
c. Road and Trail Closures	24,027
d. Seasonal ORV Closures	245,784
e. Year-long ORV Closures Except on Trails or Snowmobiles	413,266

There will be a continuing demand for reconstruction of existing buildings due to their age and condition. Demand for use of Forest roads is significant. Four-wheel drive interests want more opportunities for off-road use. Sightseers want more roads with better driving surfaces. Non-motorized recreationists want fewer roads. Public understanding of travel management is necessary for public acceptance of area and road closures or restrictions.

NEED TO ESTABLISH OR CHANGE MANAGEMENT DIRECTION

The Forest planning process included a determination of the need to change management direction. This was accomplished by assessing the current situation, determining production potentials, and reviewing the public issues and management concerns of the Forest. The following possible changes in management direction were identified:

Vegetation

Vegetation is the dominant landscape feature of the Forest. Low vegetation treatment levels combined with an active wildfire suppression program in the past have resulted in a Forest covered with mature, slow-growing vegetation. Emphasis should be increased to treat vegetation where treatment best meets the goals and objectives of the Forest, provides multiple-use benefits, is cost-efficient, and best meets the need of vegetation.

Recreation

Demand for National Forest System developed recreation will exceed supply after 1990. The Forest can expect a direct impact on recreation from population increases in the planning area in future years.

Budget constraints have forced more developed sites to be managed at a reduced service level or closed. Extended management at the reduced service level will shorten the design life of recreation improvements. Emphasis should be given to maintenance and rehabilitation of existing facilities.

Management direction should accomodate the expected increase in developed recreation use through expansion or new site construction. This will require a capital investment program to accomodate 1.3 million recreation visitor days by year 2030. To resolve site-specific problems, additional developed recreation capacity will be required by 1985.

There is a need to relocate, remove, or convert inefficient developed recreation sites.

Dispersed winter recreation opportunities should provide increased cross country ski and snowmobile trails, trailheads, sanitation facilities, and informational signing.

The Continental Divide National Scenic Trail should be evaluated and protected for recreation use.

Fish and Wildlife

Fishing demand on the Forest is met largely through artificial stocking programs. Emphasis should be increased on fisheries habitat management to bring key fisheries up to their potential. Stocking programs by the State will still be needed to meet demand.

Wildlife population goals for major species should be established in agreements with the BLM and the DOW.

Range

District Rangers are working with their counterparts in the BLM to identify opportunities for coordinated range management and administration.

Timber

Increased emphasis is needed to enhance opportunities for meeting firewood demand. The Forest should monitor and evaluate anticipated and actual timber growth response where management activities occur.

Water

Emphasis should be directed toward incorporating water augmentation objectives in vegetation treatment design. Water yield increases should be an objective of vegetation treatment. The Forest should assess cumulative impacts of all activities, both past and present, on water quality in third and fourth order watersheds.

Minerals

Emphasis should be given to oil, gas, geothermal, and mineral exploration and development outside wilderness areas.

Management direction should be established to monitor the mineral induced growth within and adjacent to the Forest. Coordination between the Forest and Region should develop a Regional program to monitor mineral industry growth. This will provide a consistent approach to planning and will eliminate duplicating efforts between Forests.

Facilities

The Forest should determine the most cost-efficient road management level. Consideration must be given to maintenance costs and capabilities within budget and manpower constraints. Long-term economic efficiency plays an important role; continuous maintenance may be more efficient than reconstruction costs.

Travel management direction is in need of refinement. The existing travel plan lacks continuity between Ranger Districts. Consideration must be given to the access needs of the area; the physical land capabilities; and the resource compatibilities such as motorized recreation with wildlife.

THE FUTURE

This section describes the expected future condition of the Forest after implementation of the Plan. It is divided into two parts: The social and economic future, and the physical and biological future.

This is a multiple-use Forest Plan. The Plan provides direction that is consistent with multiple-use, sustained yield objectives. Management activities, prescriptions, and outputs reflect this multiple-use concept. An integrated mix of outputs is scheduled for the 50 year-planning horizon. The social resource is equally important. The Plan addresses existing public issues and management concerns, and provides the framework to identify and address new issues as they emerge.

This Plan will be coordinated with the policies, programs, and objectives of other Federal agencies, State, and local governments. Such coordination will at least ensure a mutual understanding, if not a compatibility, with each other's goals.

PHYSICAL AND BIOLOGICAL FUTURE

Vegetation treatment will be directed to best meet the goals and objectives of the Forest. Treatment will also provide multiple-use benefits and be cost-efficient. Vegetation treatment will be directed towards the following multiple-use benefits:

--Providing additional recreation opportunities;
--Providing downhill ski areas;
--Providing public service through utility corridors and electronic sites;
--Increasing opportunities for significant cultural resource discovery;
--Improving visual quality;
--Increasing big game winter range;
--Improving range conditions;
--Providing wood fiber;
--Increasing tree growth and vigor;
--Increasing water yield without impairing water quality;
--Increasing the forest's resistance to insect and disease infestations;
--Reducing unwanted fuel accumulations;
--Returning revenue to the U.S. Treasury;
--Maintaining industries dependent on National Forest System land management;
--Increasing non-game wildlife habitat diversity by increasing edge.

The increased demand above existing capacity for developed recreation opportunities will not be met. The Forest will meet 50% of the increased demand above existing capacity for National Forest System developed recreation after 1990. The Plan will meet 79% of total developed recreation demand at the end of the 50-year planning horizon. This allows the private sector to meet part of the demand for developed recreation. The Forest will reduce the percentage of total demand met over the 50-year planning horizon from 100% in decade 1 to 96, 89, 82, and 79% in decades 2 through 5. Total developed recreation capacity will increase from 744,000 RVD's annually in decade 1 to 1,012,000 RVD's annually in decade 5. Approximately 45% of the sites will be operated at the full service management level.

Approximately 17% of the Forest will be managed for semi-primitive non-motorized recreation. Trail management will be emphasized, 30% of the existing Forest trail mileage will be reconstructed during the first decade (1981-1990). Fifty miles will be constructed or reconstructed annually over the planning horizon.

Wilderness management will emphasize primitive wilderness settings. In the Plan, 13,599 acres of Cannibal Plateau are suitable for inclusion in the National Wilderness Preservation System. This could increase the total wilderness acres on the Forest to 515,376 acres, 17% of the total Forest acres. No acres of Fossil Ridge are suitable for inclusion in the National Wilderness Preservation System.

National Forest System winter range carrying capacity will increase by 6% over current levels. This is due to the aspen habitat management and increased prescribed burning programs. Aspen treatment will be maintained at 500 acres annually over the planning horizon. Prescribed burning on 5,500 acres will occur annually after 1985. The Plan schedules 590,386 acres to be managed for wildlife habitat emphasis.

The Plan schedules the permitted livestock program to increase by 5%, to 335,800 AUM's grazed annually over the planning horizon. Range condition will be good with a stable trend. Grazing capacity is increased by increasing investments in structural and non-structural range improvements.

To respond to local interest in accelerating the timber harvest schedule, 35 MMBF will be offered in 1984, and 55 MMBF will be offered annually in 1985 through 1987. A review of the local demand situation will be made prior to the end of 1987 to determine if local demand for timber has significantly changed. If local demand for timber changes significantly, the Plan will be reanalyzed as required by NFMA Regulation 36 CFR 219.10(c). If local demand has not significantly changed, the remainder of the 350 MMBF planned for the decade will be offered in 1988 through 1993 at a rate of 25 MMBF annually. Any of the volume offered but not sold in the first 4 years will still be available for re-offer.

Demand for firewood will be met through 1990 providing 11.2 million board feet annually.

The Plan will increase water yields over the first ten years by 10,898 acre feet over the current situation. This will be accomplished through vegetation treatment. By the fifth decade, water yield will increase by 19,410 acre feet or .7% over the current situation.

Seventeen planning questions were identified through the Forest planning process. They represent the major public issues and management concerns and describe the physical and biological conditions of the Forest. The planning questions must be addressed if the Plan is to provide appropriate and effective management direction for the Forest. A detailed discussion of the future related to each planning question follows:

Planning Question 1 - How much and what type of recreation opportunities should the Grand Mesa, Uncompahgre, and Gunnison National Forests provide?

This planning question deals with the quantity and location of developed recreation facilities on National Forest System land. There is a need for adequate up-to-date developed recreation facilities for winter and summer use. Existing developed recreation capacity is inadequate to meet increasing demand. An issue related to this planning question is the extent to which the Forest should compete with the private sector in providing developed recreation opportunities. The Forest has a large resource of dispersed recreation opportunities not available in the private sector. If management was oriented more toward providing dispersed opportunities, part of the developed recreation demand could be met by the private sector.

The Plan responds to this planning question by meeting 50% of increased demand above existing capacity for National Forest System developed recreation opportunities after 1990. There is an opportunity for the private sector to supply developed recreation opportunities to meet demand not supplied by the Forest. Off National Forest System land, the private sector and other government agencies will be indirectly encouraged to meet demand. The Forest will provide this indirect encouragement by avoiding competition with other facilities. On National Forest System land, concessionaire-operated sites will be considered in the annual program planning and budgeting process. The Forest will respond to proponent interest in developing private recreation facilities through the special use permitting process. Development level, capital investment requests, and management levels will be specified in concessionaire agreements or special use permit requirements based on site-specific needs.

The Forest will manage 331,425 RVD's at full service management level at the end of the first ten years of the Plan. Efficient campground management will lead to relocation, removal, or conversion of some sites. One hundred seventeen camping units will be constructed by 1990 and an additional 40 will be constructed by 1995. Appendix A displays the fifty-year capital investment action plan for developed recreation. Table II-19 displays the developed recreation use for the Plan.

TABLE II-19.

DEVELOPED RECREATION USE
AND PROJECTED DEMAND
(Thousand Recreation Visitor Days Per Year)

Time Period	Non-Skiing Developed Recreation		Downhill Skiing	
	Use	Demand	Use	Demand
1981-1985	617	617	269	269
1986-1990	695	695	362	362
1991-2000	778	812	502	502
2001-2010	866	968	689	689
2011-2020	924	1,124	876	876
2021-2030	1,012	1,280	1,063	1,063

The Plan schedules the following developed recreation construction and reconstruction activities by 1990: Convert Crag Crest and Eggelston campgrounds to day use facilities; Expand Lakeview campground; and construct Mary E. and Grand Mesa campgrounds. Currently in these areas demand for developed recreation exceeds capacity. Appendix A displays the fifty-year capital investment plan for developed recreation. Chapter III, Forest Direction and Management Area Prescription 1A, provides for existing and proposed developed recreation sites. These sites include existing and proposed campgrounds, picnic grounds, trailheads, visitor information centers, summer home groups and waterbased support facilities.

Demand for downhill skiing opportunities can be met by expanding existing sites. Expansion will be permitted to meet demand. Crested Butte, Powderhorn and Telluride have approved master plans. The Crested Butte master plan includes expansion onto Snodgrass.

Potential long-term capacity for downhill skiing will be 35,600 persons at one time, and is displayed in Table II-20.

TABLE II-20.

DOWNHILL SKI AREA CAPACITY
(Existing Sites)**

Area	Existing PAOT*	Existing MRVD*	Total Approved Master Plan Capac. PAOT*	Total Approved Master Plan Capac. MRVD*	Potential Capacity PAOT*	Potential Capacity MRVD*
Crested Butte	4,050	341.7	10,700	902.8	10,700	902.8
Monarch	0	0	0	0	5,400	437.5
Powderhorn	1,800	147.4	4,500	368.4	4,500	368.4
Telluride	2,800	248.5	15,000	1,331.2	15,000	1,331.2
TOTALS	8,650	737.6	30,200	2,602.1	35,600	3,040.0

* PAOT = People at one time.
RVD = Recreation visitor days.

** The existing Monarch Ski Area is on the San Isabel National Forest. It could potentially expand onto the Forest. The figures represented here exclude the San Isabel capacity.

The Forest will retain downhill skiing opportunities on eight potential sites identified in the Final Rocky Mountain Regional Guide. Management activities will be compatible with their long-term future as downhill ski areas. Chapter III, Forest Direction and Management Area Prescription 1B, provides for existing and potential winter sports sites. Management integrates ski area development and use with other resource management to provide healthy tree stands, vegetation diversity, forage production for wildlife and livestock, and opportunities for non-motorized recreation.

Planning Question 2 - How much roadless, non-wilderness recreation opportunity should the Forest provide and where should it be located?

The major parts of this planning question involve conflicts between the motorized and non-motorized types of recreation uses. Some individuals want additional opportunities for non-motorized recreation activities such as hiking, cross-country skiing, hunting, and fishing; and consider too much of the Forest roaded. Table II-21 displays the average annual recreation demand for dispersed recreation on the Forest.

TABLE II-21.

DISPERSED RECREATION DEMAND
(Thousand Recreation Visitor Days Per Year)

Time Period	Dispersed Recreation	Off-Road Motorized	Total Dispersed Recreation
1981-1985	1,314	179	1,493
1986-1990	1,479	202	1,681
1991-2000	1,727	236	1,963
2001-2010	2,058	281	2,339
2011-2020	2,390	326	2,716
2021-2030	2,722	371	3,093

The Plan responds to this planning question by meeting the demand through 2030 for dispersed recreation, both motorized and non-motorized. Current dispersed recreation capacity on the Forest is 10.2 Million RVD's annually.

The Plan allocates semi-primitive non-motorized recreation management to 482,400 potential acres outside of wilderness areas. Roads within this area will be managed to provide semi-primitive non-motorized opportunities, to meet wildlife and other resource objectives, or to reduce maintenance costs. Some acres will be roaded for resource projects. Where roading occurs, local roads will be closed after project completion and returned to a non-motorized setting.

Dispersed recreation capacity will be increased. Increased trail construction and reconstruction will contribute to the increased capacity. Appendix B displays the ten-year trail construction/reconstruction action plan.

Chapter III, Forest Direction and Management Area Prescription 2A, emphasizes semi-primitive motorized recreation opportunities. Those opportunities include snowmobiling, four-wheel driving, and motorcycling. Chapter III, Forest Direction and Management Area Prescription 2B, emphasizes rural and roaded-natural recreation opportunities. Motorized and non-motorized opportunities include driving for pleasure, viewing scenery, picnicking, fishing, snowmobiling, and cross-country skiing. Chapter III, Forest Direction and Management Area Prescription 3A, emphasizes semi-primitive non-motorized recreation opportunities in roaded and unroaded areas. These opportunities can include hiking, horseback riding, hunting, and cross-country skiing.

Chapter III, Forest Direction, Management Activity Transportation System Management L01 provides travel management direction to ensure all dispersed recreation opportunities. Chapter III, Forest Direction, Management Activity Trail System Management L23 provides direction for the Continental Divide National Scenic Trail.

Planning Question 3 - What type of wilderness management is needed to maintain the quality of the recreation experience in existing and proposed wilderness areas?

This planning question addresses the type of wilderness management needed to maintain a quality wilderness recreation experience. The major issues center around conflicts between wilderness use and range resource management, and between different types of wilderness users.

The Plan schedules 280,330 acres of wilderness (60%) to full service management level and 186,887 acres (40%) to the reduced service management level. Opportunities for solitude and low visitor contact are provided by emphasizing primitive wilderness settings on 185,464 acres.

Additional wilderness settings are: semi-primitive 176,278 acres; and pristine 105,475 acres. In wilderness, the settings are also the management area prescriptions. Chapter III, Forest Direction and Management Area Prescriptions 8A, 8B, and 8C; provide wilderness management direction.

Dispersing wilderness users will be achieved through a wilderness permit system when use exceeds recreation opportunity spectrum guidelines for user density if indirect methods of shifting use are not successful. These guidelines are displayed in Chapter III, Forest Direction, Management Activity Wilderness Area Management B02.

Planning Question 4 - Should Cannibal Plateau Further Planning Area and Fossil Ridge Wilderness Study Area be recommended for inclusion in the National Wilderness Preservation System?

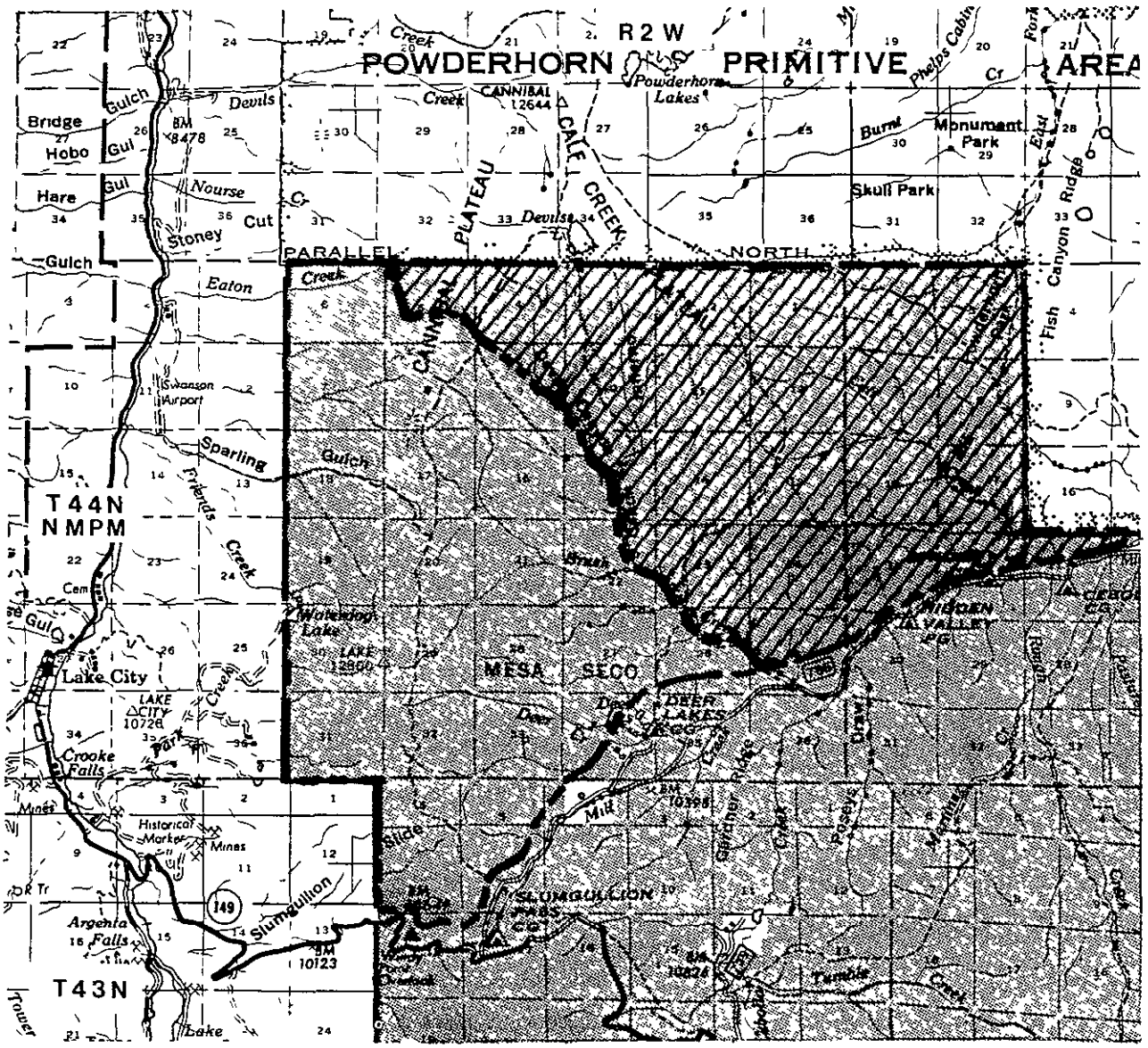
This question addresses the suitability of Cannibal Plateau Further Planning Area and Fossil Ridge Wilderness Study Area for inclusion in the National Wilderness Preservation System. The Colorado Wilderness Act identified Fossil Ridge a Wilderness Study Area and retained Cannibal Plateau's Further Planning Area designation.

In the Plan 13,599 acres* of Cannibal Plateau Further Planning Area suitable and no acres of Fossil Ridge Wilderness Study Area are suitable for inclusion in the National Wilderness Preservation System. The area designated wilderness on the Forest will increase if the suitable land is added to the National Wilderness Preservation System. Figure II-8 displays the portion of Cannibal Plateau Further Planning Area suitable for wilderness.

Source: *Section by Section Review of Land Status Atlas.

FIGURE II-8.

CANNIBAL PLATEAU FURTHER PLANNING AREA
(Suitable for inclusion in the National Wilderness Preservation System)



Further Planning Area Boundary

Area Suitable for Wilderness

0 1 2
Scale in Miles

NORTH

Planning Question 5 - How much habitat (forage, cover, water) should be available for wildlife and fish?

This planning question addresses the wildlife (excluding deer and elk) resource.

Public issues and management concerns are related to questions concerning mineral exploration and development, transportation, and municipal watersheds. The general scope of public issues and management concerns is to provide for the protection and management of wildlife habitat, including threatened and endangered species. Issues were raised on how fishery habitat will be managed.

A review of endangered, threatened, and sensitive species was made during the Forest planning process. Nineteen thousand, one hundred and four acres will be managed for threatened and endangered species. Chapter III, Forest Direction Management Activity Wildlife and Fish Resource Management C01, manages and provides habitat for recovery of threatened and endangered species. The management activity also manages and provides habitat for the Uncompahgre Fritillary Butterfly and Braya humilus spp. Ventosa (no common name).

Oakbrush is scheduled for treatment to increase habitat diversity. Chapter III, Forest Direction provides guidelines for the maintenance of dead trees and down logs as habitat for small mammals and birds.

The Plan provides 590,386 acres be managed for wildlife habitat emphasis. Vegetation diversity is enhanced. Vegetation treatment through commercial timber sales will be designed and laid out on 57,528 acres of suitable timber land which have wildlife habitat improvement as their objective. Forty structural improvements are scheduled for fisheries habitat improvement annually for the first five years of the Plan. Appendix C displays the wildlife habitat improvement action plan. Chapter III, Forest Direction and Management Area Prescription 4B, emphasizes habitat for management indicator species. The goal is to optimize habitat capability and species numbers. Chapter III, Forest Direction and Management Area Prescription 4C, emphasizes wildlife habitat in woody draws and other woody vegetation areas. Chapter III, Forest Direction and Management Area Prescription 4D, emphasizes maintaining and improving aspen. Aspen is managed to produce wildlife habitat, wood products, visual quality, and plant and animal diversity.

Chapter III, Forest Direction and Management Area Prescription 9A, emphasizes riparian area management. Resource use will be managed to protect and maintain the riparian area.

Planning Question 6 - Where and how much forage should be allocated to big game use?

This planning question addresses National Forest System winter range carrying capacity for elk and deer. The scope of this planning question revolves around providing the range resource compatible with the big game habitat.

Most public issues and management concerns deal with conflicts between livestock grazing and big game. Critical big game winter range is being lost outside the Forest boundary caused by subdivision of private land. Big game herd size is increasing and the loss of range is causing conflicts with grazing on the Forest. Motorized recreation also can cause conflicts with big game through reduced habitat effectiveness.

The Plan schedules an increase in the potential carrying capacity of National Forest System winter range from 82,700 animals in 1982, to 87,600 animals by 1995. Prescribed burning for wildlife will total 5,500 acres annually for the first ten years of the Plan, plus 500 acres annually of aspen habitat management and ten wildlife structures constructed annually. Approximately 57,528 acres of suitable timber land will be managed for wildlife emphasis over the 50-year planning horizon. Appendix C displays the wildlife habitat improvement action plan.

Winter range on the Forest totals 242,694 acres. Approximately 36,389 forested acres and 206,305 nonforested acres will be managed for big game winter range. Chapter III, Forest Direction and Management Area Prescription 5A, provides big game winter range in nonforested areas. Management emphasizes winter range for deer, elk, bighorn sheep, and mountain goats. Treatments are applied to increase forage production of existing grass, forb, and browse species or to alter plant species composition. Prescribed burning, seeding, spraying, planting, and mechanical treatments may occur. Browse stands are regenerated to maintain a variety of age classes and species. Chapter III, Forest Direction and Management Area Prescription 5B provides big game winter range in forested areas. Management emphasizes forage and cover for deer, elk, bighorn sheep, and mountain goats. Vegetation treatments are applied to increase forage production or create and maintain thermal and hiding cover.

Planning Question 7 - Where and how much forage should be allocated for livestock use?

This planning question addresses allocation of the range resource between competing uses. The public issues indicated Forest users were not opposed to domestic livestock grazing, but were concerned with how much grazing will be permitted; and where it will occur in relation to other resource uses. Public issues opposed to domestic livestock grazing centered around riparian areas, wilderness, and municipal watersheds.

The Plan schedules the permitted livestock program to increase by 5%, to 335,800 animal unit months grazed annually. Range conditions will be good with a stable trend. Grazing capacity is increased by increasing investments in structural and non-structural range improvements. Intensive management involves relatively high costs yet results in greater yields per acre than other management types. Intensive management on some sites allows other areas to be managed extensive. This will reduce conflicts from livestock presence. Appendix D displays the ten-year range betterment action plan.

Intensive management will be implemented through individual Allotment Management Plans. Approximately 95% of the suitable rangelands are in satisfactory condition. Chapter III, Forest Direction and Management

Area Prescription 6A, emphasizes improving rangeland to a satisfactory condition. Condition is improved through vegetation treatment and soil restoration activities, improved livestock management, and regulation of other resource activities. Chapter III, Forest Direction and Management Area Prescription 6B emphasizes maintaining rangeland in a suitable condition.

Planning Question 8 - How should Forest products be managed to supply commercial and non-commercial demands on the Forest?

This planning question addresses the timber management program on the Forest. Issues and concerns related primarily to firewood availability and wood products. There is an increasing demand for firewood. Issues and concerns opposed to timber management centered around clearcutting, overcutting in watersheds, and the Forest's role in supplying timber for the nation. Issues and concerns not opposed to timber management centered around firewood access, timber management needed to enhance other resources such as range and wildlife, getting unproductive forest land into production, and managing timber on a sustained yield basis.

To meet the commercial and non-commercial demands for Forest products, a multiple-use concept empahsizing site specific attributes is necessary. The number one management concern is regeneration or perpetuation of the present vegetation (habitats) in approximately the same or current distribution. Vegetation treatment through commercial and noncommercial timber harvests are designed to achieve objectives in insect and disease control, wildlife habitat improvement, range improvement, recreation and water yield. The objective for timber under this management concept is on a sustained-yield basis to produce optimum volume yields that are based on maintaining proper stand stocking levels and the development of equal proportions of stand age classes for a regulated forest management system.

This mandates a level of intensive management practices that includes continuous stand inventory of suitable lands every ten years, allocation or harvest schedule of allowable sale quantity for ten years based on the stand inventory, development of environmental assessments providing site specific multiple-use alternatives, sale layout that meets objectives of chosen environmental assessment alternative, quality sale administration assuring all mitigation measures are carried out, and timely reforestation and timber stand improvement activities. This management level is required to meet the demands for commercial and non-commercial Forest products and to obtain the long-term sustained yield capacity.

The Forest must encourage the development of new markets. Wildlife and visual management goals depend on maintaining the presence of aspen species near present levels. Accomplishment of this goal requires that older stands be regenerated to a new stand of young trees before the aspen is replaced by other vegetation types through natural succession.

Regeneration of the older aspen can be accomplished by burning or cutting down the existing trees. This permits new trees to develop from the root system of the burned or cut trees. Another management option is to designate the stands to be regenerated and offer the trees for public sale for utilization as firewood or sawlogs. Selling the trees can accomplish the same goal at a reduced or equivalent cost with the further benefit of returns to the U.S. Treasury.

Three hundred fifty million board feet of timber will be offered for sale during the period 1984 through 1993. To respond to local interest in accelerating the timber harvest schedule, 35 MMBF will be offered in 1984 and 55 MMBF will be offered annually in 1985 through 1987. A review of the local demand situation will be made prior to the end of 1987 to determine if local demand for timber has significantly changed. If local demand for timber changes significantly, the timber harvest schedule will be reanalyzed as required by NFMA Regulation 36 CFR 219.10(c). If local demand has not significantly changed, the remainder of the 350 MMBF planned for the decade will be offered in 1988 through 1993 at a rate of 25 MMBF annually. Any of the volume offered but not sold in the first 4 years will still be available for re-offer. These outputs will maintain or enhance the stability of industries needed to produce local goods and services. Appendix E displays the 10-year timber action plan. The Forest will manage 57,528 acres of suitable timber land to emphasize wildlife management. Appendix Q displays the Level One Fire Management analysis. Appendix R displays the Mistletoe Action Plan for lodgepole pine.

The Plan will meet the firewood demand through 1990 providing 11.2 MMBF annually. The timber resource inventory is scheduled for completion in 1985 and will be incorporated into the Plan.

The Plan will eliminate the accumulation of forested areas not regenerated by 1984. Reforestation is scheduled for 375 acres annually. Reforestation is necessary as a result of harvest, wildfires and other catastrophic events. In order to better insure regeneration of harvested conifer stands, some work will be done at the time of the regeneration harvest. The necessary work will be seed bed preparation to encourage natural regeneration. If natural regeneration is not expected to occur or does not occur, the area will be planted. No work is planned in the aspen type following harvest as natural regeneration readily occurs in this type. The amount of reforestation activity varies and is determined by the amount of suitable acres and the silvicultural treatment of these acres. Appendix F summarizes the land capable, available, and suitable for timber production on the Forest.

Chapter III, Forest Direction and Management Area Prescriptions 7A, 7C, and 7E emphasize wood fiber production and utilization. Prescription 7A utilizes the clearcut harvest method in aspen, spruce-fir, and lodgepole pine on slopes less than 40%. Prescription 7C utilizes the clearcut harvest method in lodgepole pine and the group selection harvest method in spruce-fir for slopes greater than 40%. Prescription 7E utilizes the clearcut harvest method in lodgepole pine and the shelterwood harvest method in spruce-fir and ponderosa pine on slopes less than 40%.

Planning Question 9 - What surface resource uses should be permitted in municipal watersheds?

This planning question addresses the potential effects of recreation, range, timber, and minerals (mining and exploration) uses on the quality and quantity of municipal water supplies.

This planning question was formulated initially in response to potential adverse effects of mining and exploration activity on the quality of the municipal water supplies. There is a concern that minerals, timber management, and grazing activity is increasing and could degrade water quality.

The Plan will permit uses that do not degrade water quality below Federal, State or local water quality standards. Chapter III, Forest Direction and Management Area Prescription 10E, provides for municipal watershed and municipal water supply watersheds. Management emphasizes protection or improvement of the water quality and quantity. Management practices vary from use restrictions to water yield improvement. The primary objective is to meet water quality standards established for the individual watershed. The prescription is applied to the Fruita Division (7,440 acres). Appendix G displays the water quality monitoring action plan and Appendix N displays soils monitoring action plan.

Planning Question 10 - How should the Forest respond to increasing demands for water?

The scope of the planning question includes public issues and management concerns for surface and groundwater management. Surface water on the Forest is a national concern due to the location of the Forest at the headwaters of the Colorado River. Runoff from this area is critical to the water supply of the southwest United States where much of the water generated on the Forest is used. There is an increasing demand for water on the western slope. New industries also require additional water.

The Plan will increase water yields over the first ten years by 10,898 acre feet per year or .4% over the current situation, primarily through vegetation treatment. Water quality goals will be achieved. The Forest will secure water rights necessary for National Forest System administration. Table II-22 displays the effects of the Plan on water yield and sediment production.

Appendix G displays the water quality monitoring action plan. Appendix N displays the soils survey action plan.

TABLE II-22.

EFFECTS ON WATER YIELD AND SEDIMENT**

Variable	Units*	Quantity
PERIOD 2 (Thru 1990)		
Increase in Water Yield Over Current	Ac Ft/Yr	10,898
Increase Over Current	Percent	0.4
Increase in Sediment Over Current	Ac Ft/Yr	1.06
PERIOD 6 (Thru 2030)		
Increase in Water Yield Over Current	Ac Ft/Yr	19,410
Increase Over Current	Percent	0.7
Increase in Sediment Over Current	Ac Ft/Yr	1.75
Water Yield Increase Potential Achieved (50 Year Period)	Percent	29.0
Cumulative Increased Water Production (50 Year Period)	Ac Ft	823,835
Cumulative Increase in Sediment (50 Year Period)	Ac Ft	75

* Units
Ac Ft/Yr = acre-feet per year
Ac Ft = acre-feet

** The water yield increase potential from commercial forest land is calculated to be 67,000 acre-feet per year over current levels - a 2.3 percent potential increase

Timber harvest will be designed to increase runoff. Within the first ten years, 7,480 acres or 1.6% of the total suitable forest land will be harvested by clearcut methods. Maximum effectiveness can be obtained when clearcuts are two to seven tree heights in size and oriented so the wind will deposit snow in the openings. These openings are temporary. As new trees grow and reduce water yields, other openings will be created to maintain desired increases.

Chapter III, Forest Direction and Management Area Prescription 9B, emphasizes increased water yield and improved flow timing through vegetation treatment on 14,580 acres. The location, shape, and size of vegetation treatment areas are specifically designed. Clearcutting is the harvest method used with all forest cover types. Management activities in foreground, middleground, and background may dominate, but harmonize and blend with the natural setting.

Planning Question 11 - How should the Forest coordinate mineral activity with other resource values?

This planning question addresses the potential effects of mineral development on all the other resources; particularly wilderness, wildlife, water, and visual.

The planning question was formulated from issues and concerns relating to increased mineral exploration and development activity throughout the Forest. Minerals development may conflict with recreation use and wildlife habitat.

Table II-23 summarizes the land recommended available for mineral leasing on the Forest. The following figures apply to all National Forest System land disclosed in this Plan; including unclassified land, designated wilderness, further planning area, and wilderness study area: 2,118,055 acres available for leasing with surface occupancy; 315,486 acres available for leasing without surface occupancy; and 471,486 acres unavailable for mineral leasing. Within the five existing wilderness areas, 283,513 (62 percent) will be recommended unavailable for mineral leasing. Appendix I displays the land recommended available for mineral leasing. Appendix J displays the minerals withdrawal and review action plan.

Chapter III, Forest Direction, Management Activities Minerals Management - Oil, Gas and Geothermal G02 and Minerals Management - Coal, Leaseable Uranium and Non-energy Common Minerals Materials G03; provides direction for mineral exploration and development.

TABLE II-23.

MINERAL LEASING SUMMARY

Area	Leasing Availability Recommendation	Acres
Wilderness*	No Lease	285,992
	Lease with Surface Occupancy	76,418
	Lease without Surface Occupancy	104,807
Unclassified	No Lease	185,494
	Lease with Surface Occupancy	2,041,637
	Lease without Surface Occupancy	210,679
TOTAL		2,905,027

* Includes the five displayed wilderness areas and the area identified suitable for wilderness classification for Cannibal Plateau Further Planning Area.

Oil and gas deposits within the no surface occupancy areas could be recovered through directional drilling or other techniques which will not disturb surface resource values. When commercial timber harvest is scheduled on no lease areas, leasing will be recomended with the limited surface use stipulation. Leases issued for land which is part of the National Wilderness Preservation System would include reasonable stipulations required by Section 4(d)(3) of the Wilderness Act. Leases issued for land which is recommended suitable for inclusion in the National Wilderness Preservation System would include stipulations, provided by the 1920 Minerals Leasing Act. These stipulations are contained in Appendix H.

Approximately 755,862 acres have been identified having "high" to "moderate" suitability for coal leasing through application of the BLM Coal Unsuitability Criteria (43 CFR 3461); 224,491 acres of the suitable acres were assessed as unsuitable for coal leasing. These criteria are displayed in the appendices in the accompanying Final EIS.

Limits on the time available for staking and validating claims and obtaining leases in designated wilderness are established in the 1964 Wilderness Act. The Act provides that the United States mining and mineral leasing laws apply within wilderness areas until midnight December 31, 1983. Effective January 1, 1984, wilderness areas are withdrawn from mineral entry. This withdrawal is subject to valid claims and existing leases. Valid claims and existing leases on the withdrawal date are still available for further exploration and development. Claims that lack discovery by the above date will be void.

After midnight December 31, 1983, new leases will not be available in wilderness areas. Leases obtained within wilderness or wilderness study areas prior to the above date will be subject to lease stipulations designed to protect the wilderness environment. These are included in the appendices accompanying the Plan. In the case of coal leasing, wilderness designation of the study area will preclude coal leasing. This is subject to existing rights. Under non-wilderness designation, the question of suitability or unsuitability for coal leasing will be determined by applying BLM's unsuitability criteria.

Measures will be designed to meet the management area direction for the areas invloved. Road closures and travel restrictions will be utilized to comply with management area direction. Where impacts on big game are significant, mitigation, in the form of off-site habitat improvement could be required.

Planning Question 12 - What type of transportation system is necessary to manage the Forest and its resources?

This planning question addresses the transportation requirements of all resource elements. Public issues indicate that environmental damage is occurring from indiscriminate motorized vehicle use and this dispersed motorized recreation use is also interfering with other resource uses.

Existing roads will be open, restricted, closed, or obliterated to manage public and administrative road traffic. These actions will support resource management objectives and bring maintenance needs into balance with the Forest's maintenance capabilities. Protection of both resources and investments and user safety are the basic Forest management principles that are integrated into the criteria for the Plan. Specific direction for travel management is given in the Forest Direction. See Chapter III, Forest Direction, Management Activity Transportation System Management L01. Economic analysis indicates that it is more cost-effective to close roads with gates and maintain at reduced maintenance levels than to keep roads open. Keeping the roads open and maintained provides benefits related to firewood access and dispersed recreation, but has an impact on wildlife seclusion and maintenance costs. All management activities are designed to be compatible with areas open, restricted, or closed. All newly developed roads with a single purpose (timber, energy, minerals, etc.) will be closed to non-project public use. Exceptions may be made where justification for public use of the road and associated land area is demonstrated.

The number of miles of Forest roads will increase by 5% in the first ten years of the Plan. Fifty-seven miles of arterial road, 44 miles of collector road, 216 miles of local road and 15 bridges will be constructed or reconstructed in the first ten years of implementation. Appendix O displays the ten-year arterial/collector road construction/reconstruction action plan. Table II-16 displays the support facilities required by the Plan. Appendix P displays the ten-year facility construction plan. Most of the local road construction/reconstruction will be for access for timber management. Local roads to access oil and gas, mineral and other special use activities will be financed by the special use permittee and are not included in the totals in Table II-24. Travel management includes the management of roads and trail use and off-road vehicle use.

TABLE II-24.

SUPPORT FACILITIES REQUIRED
(Total Per Period, Units as Noted)

Time Period	Arterial Roads (Miles)	Collector Roads (Miles)	Local Roads (Miles)	Bridges (Each)	FA&O* Buildings (Each)
FY 1981	8.1	1.4	20.0	2.0	0.0
1981-1985	29.0	22.5	116.1	7.0	15.0
1986-1990	28.2	22.0	100.0	8.0	15.0
1991-2000	19.3	13.3	64.0	5.0	15.0
2001-2010	16.0	13.0	64.0	3.0	15.0
2011-2020	16.0	13.0	64.0	2.0	15.0
2021-2030	16.0	13.0	62.1	3.0	15.0

* FA&O = Fire, Administrative & Other General Purpose

New regulations governing Forest Highway administration and construction went into effect April 12, 1982. A list of Forest roads which have been designated Forest Highways are displayed in Appendix O. Criteria for and discussion of Forest Highways is also included in Appendix O. Since counties will send their proposals to the Colorado State Highway Department, it is imperative the Forest and counties coordinate their efforts and resulting recommendations. An action plan for Forest Highway recommendations is displayed in Appendix O. Colorado Forest Highway 59 (Almont-Buena Vista) has been scheduled for construction through 1986. The first phase is the reconstruction of three bridges in 1982-83 at an estimated cost of $633,000. The total project cost is estimated at $12,000,000 over a 10 year period. An additional harvest of 58 MMBF of timber at a reduction in haul cost of $11/MBF over the next 20 years will be realized with the improvement of Forest Highway 59. In addition, the prediction for the year 1990 is that dispersed recreation use would be 62,000 RVD's greater with the project.

Planning Question 13 - How should the Forest handle the problems caused by private land within and adjacent to the National Forest?

Public issues and management concerns related to land adjustments either express a desire for more access to the Forest or identify conflicts with private land in or adjacent to the Forest. There is loss of wildlife habitat winter range caused by subdivision of private land. There are about 1,700 private acres within existing wilderness areas on the Forest.

The Plan will ensure that Forest land is accessible as needed to support management activities. The Plan proposes 40 special use right-of-way grants annually for the first five years. Chapter III, Forest Direction, Management Activity Special Use Management J01; provides direction for special use applications. Appendix M discusses the Forest's right-of-way acquisition program. Chapter III, Forest Direction, Management Activity Rights-of-Way and Land Adjustments J02, provides direction. Landline locations will equal 25 miles annually for the first five years. Chapter III, Forest Direction, Management Activity Property Boundary Location J06, provides direction for prioritizing landline boundary locations. Currently no land purchases are planned. Some acquisitions are planned through land exchange. Appendix K sumarizes the landownership adjustment program on the Forest.

Land exchanges which will result in the greatest public benefit will be given highest priority. Table II-25 displays the lands program.

TABLE II-25.

LANDS PROGRAM
(Average Annual)

Action	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Land Exchange (Offered Acres)	800	320	240	240	240	240
Right-of-Way Acquisition (Cases)	10	15	8	8	7	7
Occupancy Trespass (Cases)	15	20	23	10	10	10
Landline Location (Miles)	25	20	20	20	20	20
Special Use Management Right-of-Way Grants (Cases)	40	30	30	20	20	20

Opportunities were identified for possible jurisdictional land transfer between Federal agencies. Appendix L discusses the criteria developed in cooperation with the BLM.

Planning Question 14 - Where should the Forest provide utility corridors and how should they be managed?

This planning question addresses forest land used for rights-of-way for major transmission lines. The primary concern is impacts on resources created by these utility rights-of-way.

The impacts will be reduced by concentrating the transmission rights-of-way in corridors. Chapter III, Forest Direction, includes measures to mitigate potential soil, water, and visual impacts resulting from the construction and reconstruction of transmission corridors. Expanding compatible uses in existing corridors is emphasized over new corridor development. Growth on the western slope will require additional transmission capacity and transmission lines may cross National Forest System land.

The Rocky Mountain Regional Guide establishes standards and guidelines to be used by the Forest in activities related to utility corridors. Chapter III, Forest Direction and Management Area Prescription 1D, provides for utility corridors on 4,535 acres. Management emphasis is for major oil and gas pipelines, major water transmission and slurry pipelines, electrical transmission lines, and transcontinental telephone lines. Management activities within these linear corridors strive to be compatible with the management goals of the management areas through which they pass.

Selection criteria were identified to respond to applications for new transmission corridors. These are watersheds, visual quality objectives, visual absorption capability, wildlife winter range, land classification (i.e. wilderness, scenic areas), and existing transmission corridors.

Livestock grazing will be permitted within the corridor. Recreation use will be directed away from the corridor.

Planning Question 15 - Can service to the public and administration be improved with Forest or District boundary changes?

This planning question addresses the possibility of recommending District or Forest boundary changes; land exchange opportunities between the Forest Service and Bureau of Land Management (BLM); and between the Forest Service and National Park Service.

There are no district boundary changes proposed in the Plan.

The Forest has tentatively identified 89,250 acres for possible jurisdictional land transfer to the BLM. The Forest has also tentatively identified 265,280 acres of BLM administered land for possible jurisdictional land transfer to the Forest. The Regional Office is coordinating this program. A Forest action plan will be developed to correspond with Regional direction. In addition, 760 acres have been tentatively identified for possible jurisdictional land transfer to the National Park Service. Appendix L displays the criteria used in the possible land transfers.

Planning Question 16 - How should the Forest manage significant cultural resources (and other special interest areas)?

The planning question addresses cultural resource protection.

The Plan will protect significant cultural resources by avoidance and/or study. Cultural resource sensitivity areas will be determined by use of a predictive model. Areas of high sensitivity for cultural resources will be surveyed prior to ground disturbance. Chapter III, Forest Direction, Management Activity Cultural Resource Management A02 ensures that all activities will be compatible with the cultural resource management goal.

The Gothic Research Natural Area will retain its designation. Tabeguache and Escalante Creek will be recommended for management as research natural areas. Their management includes preserving, protecting, studying, and interpreting the botanical and zoological communities. Chapter III, Forest Direction and Management Area Presciption 10A, provides for Research Natural Areas.

The Dry Mesa Dinosaur Quarry and the Slumgullion Earthflow National Natural Landmark will continue to be managed as special interest sites. Alpine Tunnel Historic District and Ophir Needle National Natural Landmark will be recommended for management as special interest sites. Their management includes preserving, protecting, and interpreting the geological formations and cultural resource. Chapter III, Forest Direction and Management Area Prescription 10C, provides for Special Interest Areas.

Englehart Park Archeological District will be recommended for management as a cultural resource site. It will be managed by avoidance to protect and preserve its special character. Black Face Geologic Feature will not be recommended for management as a special interest site.

Planning Question 17 - How should the Forest manage the visual resource?

This planning question addresses the adoption of visual quality objectives for National Forest System land. Included is the concern that unless the visual resource is considered during planning and project activities, negative visual impacts are likely to occur. The Forest Service Visual Management System develops a land stratification scheme to set a land classification frame of reference used in assessment.

The visual quality objective inventory comprise the following percentages of the Forest: Preservation - 15%, Retention - 6%, Partial Retention - 19%, Modification - 56%, and Maximum Modification - 4%.

The visual absorption capability inventory classified 29% of the Forest as low, 41% of the Forest as intermediate, and 30% of the Forest as high visual absorption.

The local short and long-term consequences of some management practices such as road construction and timber harvest will have a net reduction on visual quality. While these activities may occur in certain portions of the Forest, other activities may be occurring at the same time in other parts of the Forest such as road obliteration and vegetation treatment to increase diversity and visual quality. Long-term timber management and other vegetation treatment projects will improve the visual resource. There will be no significant short or long-term decline in visual quality on the Forest. Short-term reduction in visual quality will be mitigated by Management Requirements in Chapter III, Forest Direction, Management Activity Visual Resource Management A04. Projects will be designed compatible with visual resources in such prescriptions as 1A, 1B, 1D, and 2B. Each Management Area Prescription identifies a series of visual quality objectives.

SOCIAL AND ECONOMIC FUTURE

The area surrounding the Forest, Social Resource Unit H, is characterized by an expanding economy related to energy and mineral development.

Implementing the Plan will most likely not result in major changes in the general economic future, although specific sectors may experience a level of growth which can be attributed directly to activities taking place on the Forest.

The Grand Junction HRU is expected to continue as the major retail trade, energy development service, and urban area of the Social Resource Unit. Present agriculture employment is less than 5% of the labor force in the Grand Junction HRU. The Uncompahgre HRU will continue to have diverse population. Downhill skiing and wilderness management will contribute to the expected increase in tourism. Mineral activities have been important in the past and are expected to create similar pressures as the market changes. Additional timber mill capacity may be located in the Uncompahgre HRU. The Collbran HRU is expected to remain primarily ranching, however oil and gas exploration could change the land use. The major industry in the Crested Butte HRU is downhill skiing and tourism. The North Fork HRU is currently experiencing a strengthening of its coal mining sector. However, agriculture and tourism remain strong.

Human resource programs carried out by the Forest will continue to emphasize employment and training programs for youth, older Americans, minorities, and the disadvantaged to the extent that budget allocations will allow.

Market outputs will increase over current management. There will be appreciative increase in outputs in Economic Impact Areas 214 and 215. The increased outputs will be reflected in increases in population, employment, and income.

The total population in the ten counties could increase by approximately 44% during the first decade of Plan implementation. Growth would be most actively realized in the energy and mineral sector. The major communities impacted would be DeBeque, Grand Junction, and Gunnison. A secondary area of high growth would be realized in the downhill skiing sector. The major communities impacted by this sector would be Telluride and Crested Butte. Employment in the agricultural and timber producing sectors is also expected to rise as a result of generally higher levels of timber volume and livestock forage production. This assumes that the depressed housing market will recover.

Table II-26 displays the increase in employment and income in the area directly by the Plan.

TABLE II-26.

EMPLOYMENT AND INCOME COMPARISON

Variable/Economic Impact Area*	Units	Base Year 1977	Change from Base Year
Employment (1985)			
EIA-214	M Jobs	30.85 Employed	+ .596
EIA-215	M Jobs	2.415 Employed	+ .488
Income (1985)			
EIA-214	MM$	615.1	+ 6.6
EIA-215	MM$	49.6	+ 5.2

* Variable/Economic Impact Area
EIA-214 includes Mesa, Montrose, Delta, Ouray, and San Miguel counties.
EIA-215 includes Gunnison and Hinsdale counties.

Table II-27 displays the average annual estimated payments to counties for the years 1981-1990.

TABLE II-27.

ESTIMATED PAYMENT TO COUNTIES
(1978 Dollars)

County	Estimated Payment
Delta	19,300
Garfield	3,200
Gunnison	128,400
Hinsdale	19,300
Mesa	48,200
Montrose	32,600
Ouray	12,800
Saguache	35,300
San Juan	3,200
San Miguel	19,300
TOTAL	321,600

Returns to the U.S. Treasury will increase over the 50-year planning horizon under the assumption that demand for the various revenue-producing goods and services on the Forest will rise. This reflects the emphasis on income-producing resources, specifically timber and livestock forage under the Plan.

Returns to the U.S. Treasury could increase from $879,100 in 1981 to $1,047,300 (1978 dollars) by 1995. This is a 19.1% increase over the 1981 level.

The total average annual cost of implementing the Forest Plan for the next ten years could increase about 10.3%. These costs are mainly operation and maintenance costs.

Employment in the government sector is expected to remain constant unless budget allocations are drastically changed. Capital investment will be increased only slightly from present levels.

RESEARCH NEEDS

The Forest planning process identified a number of potential problems. Many of these problems may be resolved by further research. They are summarized below for consideration for research projects and will be updated during periodic evaluation of Plan implementation.

Cultural Resource

Prescribed burning, except for fireline construction, is not a ground disturbing activity and does not require a cultural survey before project implementation. Research is needed to determine the effects of prescribed burning projects on prehistoric cultural resources. Specific questions to be answered include:

--Does controlled burning affect artifact location?

--Does controlled burning damage prehistoric lithic artifacts?

Fish and Wildlife

Research needed in relation to fish and wildlife management are:

--A study to determine mule deer fawn production in relation to acorn production in the Gambel oak type.

--A study to determine whether elk calving occurs in specific areas or calving areas are chosen under a set of physical and environmental conditions.

--Determination of the course of algae growth in Grand Mesa Lakes containing fisheries.

--Definition of the habitat needs for establishment of Management standards and guidelines for the protection of the Uncomphagre fritillary butterfly, *Boloria acronema*.

--Determination of accurate habitat requirements of wildlife and an associated cost-effective means of estimating wildlife populatons for monitoring management indicator species.

--Location of suitable streams for stocking the Colorado endangered species Colorado River cutthroat, Salmo clarki pleuritious.

Range

Studies have shown that wilderness classification brings increased use by recreationists. In order to achieve compatibility between grazing and other uses in wilderness areas, research is needed to determine:

--At what point conflict may occur between grazing and other uses?

--What measures might be implemented to mitigate potential conflicts?

--How range improvements could best be utilized in wilderness areas to meet overall management objectives?

Water

Research needs for the water resource include:

--The determination whether small scale weather modification can be used to augment water yield on the Forest without unacceptable environmental degradation.

--The determination with greater precision the effects of changes in streamflow regimes on geomorphic (stream channel formation) processes and other environmental consequences of such changes.

III. Management Direction

CHAPTER III
MANAGEMENT DIRECTION

IMPLEMENTATION

This chapter of the Plan provides the long-range management direction for the Forest. The direction responds to public issues, management concerns, and management opportunities. The direction is within the capability, availability, and suitability objectives for the land and resources.

As soon as practicable after the Plan is approved, the Forest Supervisor will ensure that, subject to valid existing rights, all outstanding and future permits and other occupancy and use documents which affect National Forest System lands are consistent with the Plan. The management direction contained in the Plan is used in analyzing proposals by prospective Forest users. All permits, contracts, and other instruments for occupancy and use of National Forest System lands covered by this Plan must be consistent with the Management Requirements in both the Forest and Management Area Direction sections. This is required by 16 USC 1604(i) and 36 CFR 219.10(e).

Subsequent administrative activities affecting National Forest System lands, including budget proposals, shall be based on the Plan. The Forest Supervisor may change proposed implementation schedules to reflect differences between proposed annual budgets and actual funds received. Schedule changes resulting from the budget appropriation process will be considered an amendment to the Plan. The final annual budget allocation for the Forest will serve as amendment documentation. Changes resulting from the budget appropriation process shall not be considered a significant amendment, and will not require the preparation of an environmental impact statement. Budget changes, which over time significantly alter the long-term relationships between levels of multiple-use goods and services projected in the Plan, will be evaluated in conjuncton with the RPA Program update every five years and may result in a Plan amendment or revision.

Implementation of this management direction is the key to translating the goals, objectives, and management requirements stated in the Forest Plan into on-the-ground results. The Plan is implemented through the program development, budgeting, and annual work planning processes. These processes supplement the Plan by making annual adjustments and changes needed to reflect current priorities within the overall Plan management direction.

The Plan guides development of multi-year implementation programs for each Ranger District. The Plan's management area direction, objectives, and management requirements are translated into these multi-year program budget proposals which specifically identify the activities and expenditures necessary to achieve the direction provided by the Plan. These implementation programs form the basis for the Forest's annual program budget.

Upon final budget appropriation approval for the Forest, the annual work program is finalized and implemented on the ground. The annual work plan provides the detail to the program budget proposals necessary to guide land managers and their staffs in responding to Plan direction. The activity files in the data base and the Program Accounting and Management Attainment Reporting System provide information for monitoring the accomplishment of the annual Forest program.

Environmental assessments and environmental impact statements, when needed, will supplement the Forest Plan Environmental Impact Statement. Future environmental analyses will use Plan direction as an umbrella. Additional detail will be included in the environmental documents for future project level decisions.

The management direction of this chapter is composed of two major parts: (1) Forest Direction and (2) Management Area Direction.

Forest Direction consists of goals, objectives, and management requirements for the Forest. The goals and objectives provide broad overall direction regarding the type and amount of goods and services the Forest will provide. The management requirements contained in the Forest Direction set the minimum standards that must be maintained while achieving these goals and objectives. Management requirements establish the broad multiple-use management direction and generally apply to all areas of the Forest.

Management Area Direction consists of individual management area prescriptions applicable to specific management areas. The management area prescriptions contain management requirements specifying which activities will be implemented to achieve goals and objectives. Management requirements are specific to individual management area prescriptions within the Forest and are applied in addition to the Forest Direction Management Requirements. The management area map attached to this document indicates where the individual management area prescriptions will be applied.

Additional direction and information is displayed in Appendices A through R attached to this document.

FOREST DIRECTION

GOALS

The following goals are concise statements describing a desired condition to be achieved sometime in the future. They are expressed in broad general terms and are timeless. They have no specific date by which they are to be completed. These goal statements are the principal basis for the objectives listed later in this chapter. These goals respond to the Planning Questions listed in Chapter II as well as appropriate laws, regulations, and policies.

Vegetation

--Manage vegetation in an economically efficient manner to provide and maintain a healthy, vigorous environment capable of producing a range of multiple-use outputs and conditions; i.e., outdoor recreation, fish and wildlife habitat, livestock grazing, visual quality, water, wood fiber, research, cultural opportunities, and economic benefits to society.

Recreation

--Meet 50% of increased demand above existing capacity for developed recreation opportunities over the 50-year planning horizon on National Forest System land.

--Meet demand for downhill skiing.

--Meet demand for dispersed recreation outside wilderness.

--Preserve and manage cultural resources and ensure that these resources remain available for research and education uses.

Wilderness

--Emphasize primitive wilderness opportunities.

--Recommend an increase in the total number of acres designated wilderness on the Forest.

--Manage a majority of the wilderness acres at the full service management level.

--Implement indirect methods for controlling wilderness use.

Fish and Wildlife

--Increase National Forest System winter range carrying capacity for elk and deer.

--Increase or improve wildlife habitat diversity.

--Improve fisheries habitat.

--Increase vertical and horizontal diversity.

Range

--Increase permitted livestock grazing.

--Increase investments in structural and non-structural range improvements on range with high potential for improvement.

Timber

--Improve tree size class and age class distribution.

--Increase programmed sales offered on land suitable for timber production.

--Meet the demand for commercial and non-commercial firewood.

--Maintain availability of timber for local dependent industries.

--Accomplish the current reforestation needs.

Water

--Manage surface uses to maintain water quality above Federal, State, and local standards.

--Increase water supply, while reducing soil erosion and stream turbidity.

--Protect the water quality in streams, lakes, riparian areas, and other water bodies.

Minerals

--Encourage environmentally sound energy and minerals development.

--Coordinate mineral extraction with surface resource management.

--Integrate mineral exploration and development within the National Forest System with the use and protection of other resource values.

--Emphasize oil, gas, geothermal, and mineral exploration and development outside wilderness areas.

--Mitigate unavoidable adverse environmental effects on National Forest System land.

Human and Community Development

--Provide the opportunity for economic growth of industries and communities dependent upon Forest outputs.

Protection

--Provide a cost-efficient fire management program.

--Manage protection activities for air quality compatible with Federal and State laws.

--Prevent and control insect and disease infestations.

Lands

--Increase opportunities for exchange and transfer of National Forest System land.

--Acquire rights-of-way needed to support management of National Forest System resources.

--Post and mark the Forest boundary.

Soils

--Conserve soil resource.

--Maintain long-term land productivity.

Facilities

--Improve cost effectiveness and efficiency of road management.

--Coordinate transportation facilities to meet the needs of the Forest.

--Provide a safe, efficient and environmentally sound transportation system.

--Reduce total trail miles while emphasizing improvement on trail miles remaining.

--Maintain roads to Regional Acceptable Work Standards.

--Implement an effective travel management program.

--Update existing facilities and structures to meet State and Federal standards.

--Replace facilities and structures that are deficient from a structural, functional, mechanical, electrical, or energy efficient standpoint.

OBJECTIVES

The objectives listed in Table III-1 are concise, time-specific, measurable results that respond to the goals listed previously. These objectives are the basis for the management requirements listed in the Forest and Management Area Direction sections which follow.

The projected budget level associated with each time period is the amount necessary to implement the Plan direction and achieve multiple-use objectives. The annual budget, as authorized by Congress, may be different from that necessary to carry out the intent of the Plan. For that reason short-range objectives must be flexible to accomodate the variation. The long-range objectives must be used to guide the development of the annual budget request to ensure completion of Plan direction.

TABLE III-1.

PROJECTED AVERAGE ANNUAL OUTPUTS, EXPENDITURES, COSTS AND RETURNS

Activity*	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
RECREATION								
Developed Recreation Use (Inc. VIS)	MRVD	578	617	695	778	866	924	1,012
Management Level	% FSM/ RSM	45/55	45/55	45/55	45/55	45/55	45/55	45/55
Increased Developed Recreation Capacity	MRVD	0	0	34	88	58	88	0
Downhill Skiing Use	MRVD	222	269	362	502	689	876	1,063
Dispersed Recreation Use								
Hunting	MRVD	165	166	167	169	171	173	175
Fishing	MRVD	243	263	283	304	324	344	364
Other	MRVD	823	885	1,029	1,254	1,563	1,873	2,183
Off-Road Motorized Use	MRVD	168	179	202	236	281	326	371
Trail Const/Reconst.	Miles	0	50	50	50	50	50	45

TABLE III-1. (Cont.)

Activity*	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
WILDERNESS								
Wilderness Mgmt.**	M Acres	501.8	515.4	515.4	515.4	515.4	515.4	515.4
Management Level	% FSM/ RSM	20/80	60/40	60/40	60/40	60/40	60/40	60/40
Acres Added to NWPS	Acres							
Cannibal Plateau FPA		0	13,599	0	-	-	-	-
Fossil Ridge WSA		0	0	0	-	-	-	-
Wilderness Use	MWVD	164	176	194	223	268	322	386
FISH & WILDLIFE								
Wildlife Habitat Imp. (Silvicultural Treatment)	Ac Treated	3,220	1,800	1,800	1,800	1,800	1,800	1,800
Aspen Treatment for Wildlife Hab. Mgmt.	Acres	500	500	500	500	830	830	830
T & E Hab Mgmt.	Acres	19,104	19,104	19,104	19,104	19,104	19,104	19,104
Winter Range Carrying Cap. Elk, Deer	M Animals	82.7	87.3	87.3	87.6	87.2	86.8	86.8
Wildlife Structures	Number	35	10	10	10	10	10	10

TABLE III-1. (Cont.)

Activity*	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
FISH & WILDLIFE CONT.								
Non-Structural Wildlife Habitat Improvement (Prescribed Burns)	Acres	3,500	4,500	5,500	5,500	5,500	5,500	5,500
RANGE								
Grazing Use (Livestock)	MAUM	320.0	324.0	331.8	335.8	335.8	335.8	335.8
Acres Scheduled for Non-Structural Improvement	Acres		2,985	2,985	2,985	2,985	2,985	2,985
TIMBER								
Programmed Sales* Offered	MMBF	28.8	33.0	37.0	35.0	35.0	38.3	41.1
Reforestation	Acres	638	408	408	343	380	381	364
Tbr. Stand Improv.	Acres	1,500	1,200	300	200	500	500	700
WATER								
Avg. Annual Yield	MM Ac Ft	2.869	2.880	2.880	2.885	2.888	2.889	2.890

*Three hundred fifty million board feet of timber will be offered for sale during the period 1984 through 1993. To respond to local interest in accelerating the timber harvest schedule, 35 MMBF will be offered in 1984, and 55 MMBF will be offered annually in 1985 through 1987. A review of the local demand situation will be made prior to the end of 1987 to determine if local demand for timber has significantly changed. If local demand for timber changes significantly, the Plan will be reanalyzed as required by NFMA Regulation 36 CFR 219.10(c). If local demand has not significantly changed, the remainder of the 350 MMBF planned for the decade will be offered in 1988 through 1993 at a rate of 25 MMBF annually. Any of the volume offered but not sold in the first 4 years will still be available for re-offer.

TABLE III-1. (Cont.)

Activity*	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
MINERALS								
Mineral Leases and Permits	No. Oper. Plans	90	110	118	136	156	182	184
Locatable Minerals	No. Oper. Plans	55	85	100	100	100	100	100
Acres Recommended Available for Leasing with Surface Occupupancy in Wilderness**	M Acres		76.4	0	0	0	0	0
Acres Recommended Available for Leasing without Surface Occupancy in Wilderness**	M Acres		104.8	0	0	0	0	0
Acres Recommended Unavailable for Leasing in Wilderness**	M Acres		286.0	0	0	0	0	0
Acres Recommended Unavailable for Leasing on Unclassified Land**	M Acres		185.5	185.5	185.5	185.5	185.5	185.5
Acres Recommended Available for Leasing with Surface Occupancy on Unclassified Land**	M Acres		2,041.6	2,041.6	2,041.6	2,041.6	2,041.6	2,041.6
Acres Recommended Available for Leasing without Surface Occupancy on Unclassified Land**	M Acres		210.7	210.7	210.7	210.7	210.7	210.7

TABLE III-1. (Cont.)

Activity*	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
PROTECTION								
Fuelbreaks & Fuel Treatment	Acres	1,500	1,900	1,800	2,000	1,600	1,600	1,600
Insect & Disease Surveys	M Ac	1,000	5,000	4,000	4,000	4,000	4,000	4,000
LANDS								
Land Exchange Offered	Acres	440	800	320	240	240	240	240
ROW Acquis.	Cases	11	10	15	8	8	7	7
Occup. Tress.	Cases	5	15	20	23	10	10	10
Landline Loc.	Miles	31	25	20	20	20	20	20
S.U. Mgmt & ROW Grants Trails & Roads	ROW	25	40	30	30	20	20	20

TABLE III-1. (Cont.)

Activity*	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
SOILS								
Soil & Water Resource Improvement (Imp. Watershed Cond.)	Acres	80	72	76	76	60	60	60
Annual Soil Surveys	Acres	100,000	227,500	170,000	10,000	10,000	10,000	10,000
FACILITIES								
Road Const/Reconst (Arterial)	Miles	8.1	5.8	5.6	1.9	1.6	1.6	1.6
(Collector)	Miles	1.4	4.5	4.4	1.3	1.3	1.3	1.3
(Local)	Miles	20.0	23.2	20.0	6.4	6.4	6.4	6.2
Bridge & Maj. Culvert Const/Reconst.	Each	2.0	1.4	1.6	0.5	0.3	0.2	0.3
FA&O Const/Reconst (Buildings)	Each	0.0	3.0	3.0	1.5	1.5	1.5	1.5

TABLE III-1. (Cont.)

Activity*	Unit of* Measure	1981	Time Period 1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
BENEFITS **								
Returns to Treasury	M/$	879.1	1,047.9	1,047.9	1,045.3	1,050.6	1,075.1	1,069.8
Payment to Counties	M/$	273.8	321.6	321.6	321.0	322.3	334.1	337.3
COSTS								
All Elements	M/$	5,590.0	6,956.3	6,956.3	6,460.2	6,719.3	7,316.2	7,855.9
Capital Investment	M/$	355.0	788.7	788.7	577.9	672.0	499.7	672.0
Reforestation Backlog	M/$	369.6	192.5	0	0	0	0	0
Total Appropriation	M/$	5,759.8	7,229.0	7,229.0	6,714.2	7,002.1	7,577.2	8,101.2
Allocated Funds	M/$	554.8	508.5	316.0	323.9	302.9	324.7	346.4
Total NFS**	M/$	6,314.6	7,737.5	7,545.0	7,038.1	7,305.0	7,901.9	8,441.6

TABLE III-1. (Cont.)

* Activity

NWPS = National Wilderness Preservation System.
WSA = Wilderness Study Area.
Tbr. Stand Improv = Timber Stand Improvement.
S.U. = Special Use.
FPA = Further Planning Area.
T&E = Threatened and Endangered.
ROW = Rights-of-Way.
FA&O = Fire, Administration and Other General Purpose.

* Unit of Measure

MRVD = Thousand Recreation Visitor Days.
M Acres = Thousand Acres.
MWVD = Thousand Wilderness Visitor Days.
M Animals = Thousand Animals.
MMBF = Million Board Feet.
No. Oper. Plans = Number Operating Plans.
% FSM/RSM = Percent Full Service Management/ Reduced Service Management.
Ac Treated = Acres Treated.
MAUM = Thousand Animal Unit Months.
MM Ac Ft = Million Acre Feet.
M/$ = Thousand Dollars.

** This total includes only Grand Mesa, Uncompahgre and Gunnison National Forest's acres for the Big Blue, Collegiate Peaks, La Garita, Lizard Head, Maroon Bells-Snowmass, Mount Sneffels, Raggeds and West Elk Wilderness areas and 13,599 acres of Cannibal Plateau Further Planning Area identified suitable for inclusion in the National Wilderness Preservation System.

** All costs and returns are shown in constant 1978 dollars.

** The current year benefit and cost information is for fiscal year 1981. The actual total Appropriated Funds and total National Forest System Funds for fiscal year 1982 (1978 dollars) are $6,519,590 and $6,922,415 respectively.

** Leasing recommendations may be further analyzed on a project level with the criteria displayed in the Forest Direction if lease applications are received.

MANAGEMENT REQUIREMENTS

The management requirements in this section set the baseline conditions that must be maintained throughout the Forest in carrying out this Plan. They establish the environmental quality requirements, natural and depletable resource requirements, and mitigating measures that apply to all Forest areas. Any necessary additions to them are included in the management requirements for the individual management areas. The management requirements listed in the Management Area Direction Section are applied in addition to those in this section. Substantive changes which alter the intent of these management requirements may not be made without amending or revising the Forest Plan. Editorial and other minor modifications to these management requirements which do not alter their intent may be made without amending or revising the Forest Plan.

Management requirements are presented in three columns: Management Activities, General Direction Statements, and Standards and Guidelines.

Management Activities are work processes that are conducted to produce, enhance, or maintain output levels, or to achieve administrative and environmental quality objectives. Management Activities are identified by a code number and title defined in the Management Information Handbook (FSH 1309.11) dated July 1980. In some cases, management activities were grouped under one activity when it was not appropriate to develop separate requirements. National Forest System land will be managed to comply with laws, regulations, Executive Orders, direction in the Forest Service Manual, and Regional Acceptable Work Standards.

General Direction Statements specify the actions, measures, or treatments (management practices) to be done when implementing the management activity, or the condition expected to exist after the general direction is implemented.

Standards and Guidelines are quantifications of the acceptable limits within which the general direction is implemented.

Identification numbers shown in parentheses following each General Direction and Standard and Guideline statement are intended to facilitate future tiering to the Forest Plan and Final EIS. Users and reviewers of the Plan will find these identification numbers useful for cross-referencing and identification of mitigation measures.

Management requirements included in overall Forest Direction are displayed on the following pages for all National Forest System land on the Grand Mesa, Uncompahgre and Gunnison National Forests.

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Diversity on National Forests and National Grasslands (A00)	01 Maintain structural diversity of vegetation on units of land 5,000 to 20,000 acres in size, or fourth-order watersheds, that are dominated by forested ecosystems (0061) (FDR)	a Maintain or establish a minimum of 20 percent of the forested area within a unit to provide vertical diversity (6030) (FDR)
		b Maintain or establish a minimum of 30 percent of the forested area within a unit to provide horizonal diversity (6031) (FDR)
		c In forested areas of a unit, 5 percent or more should be in old-growth and 5 percent or more should be in grass/forb stages (6032) (FDR)
		d In forested units, create or modify created openings so they have a Patton edge-shape index of at least 1 4 and have at least a medium-edge contrast (6033) (FDR)
	02 Retain existing medium- or high-contrast edges within forested diversity units (0060) (FDR)	
	03 If medium-contrast edges are created in units dominated by grassland or shrubland, create openings with Patton edge-shape index of at least 1 4 Manage unmanipulated plant communities to reach late seral stages (0288) (FDR)	a Maximum size of individual treated areas is 500 acres (6237) (FDR)
	04 In forested diversity units, maintain an average of 20-30 snags (in all stages of development) per 10 acres, well distributed over the diversity unit. (2000GM) (FDR)	a Provide at a minimum, an average of 6-10 snags per 10 acres of the following minimum diameters (where biologically feasible) -Ponderosa Pine, Douglas-fir and spruce-fir 10 inches dbh

CONTINUATION OF

-Aspen and Lodgepole pine 8 inches dbh
(6021) (FDR)

b Retain an average length per acre of down-dead logs (where biologically feasible) of the following minimum diameters

-Ponderosa Pine, Douglas-fir and spruce-fir - 12 inch diameter
50 linear feet/acre
-Aspen and Lodgepole pine - 10 inch diameter
33 linear feet/acre
(6022) (FDR)

05 Manage aspen for retention wherever it occurs, unless justified by one of the following

a Conversion of determinate aspen to conifers, or shrub-or grass/forb seral stages for wildlife, esthetic, recreation, transportation, or watershed purposes
b Conversion of determinate aspen to conifers on sites with high site index for conifers, in conjunction with a high demand for softwood; or
c Areas of aspen which are larger than are needed for wildlife or esthetic purposes
(0286) (FDR)

06 If determinate aspen stands are managed for regeneration, treat contiguous areas no larger than 40 acres, unless larger areas are needed to protect aspen regeneration or prevent decadence Treat entire clones Indeterminate (climax) aspen stands can be converted to other cover types if needed to meet other objectives
(0287) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Cultural Resource Management (A02)	01 Protect, find an adaptive use for, or interpret all cultural resources on National Forest System (NFS) lands which are listed on the National Register of Historic Places, the National Register of Historic Landmarks, or have been determined to be eligible for the National Registers (0039) (FDR)	a Follow direction in FSM 2360 (6310) (FDR)
	02 Nominate or recommend cultural resource sites to the National Register of Historic Places by 1990 in the following priority a Sites representing multiple themes; b Sites representing themes which are not currently on the National Register within the State; or c Sites representing themes which are currently represented by single sites (0045) (FDR)	
	03 Protect and foster public use and enjoyment of cultural resources a Complete cultural resource surveys prior to any ground-disturbing project; b Avoid disturbance of known cultural resources until evaluated and determined not significant; c Collect and record information from sites where there is no other way to protect the properties; d Issue antiquities permits to qualifying academic institutions or other organizations for the study and research of sites (0131) (FDR)	
	04 Evaluate for eligibility to the National Register Historic Places (NRHP) all cultural resources located on NFS lands Eligible cultural resources will be nominated to NRHP (2032GM) (FDR)	
	05 Maintain NRHP eligible or listed historic resources to prevent deterioration or damage from weather or other natural, animal, or human intrusions (2033GM) (FDR)	

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Visual Resource Management (A04)	01 Apply the Visual Management System to all National Forest System (NFS) lands Travel routes, use areas and water bodies determined to be of primary importance are sensitivity level 1 and appropriate visual quality objectives are established according to the Visual Management System (0360) (FDR)	a Follow direction provided in FSM 2380 and FSH 2309 16 through FSH 2309 25 (6205) (FDR) b The adopted Visual Quality Objective (VQO) will be the same as the inventoried (VQO) except for prescription 3A (As identified in the National Forest Landscape Management System) (8020GM) (FDR) c The following table combines visual quality objectives/distance zones and visual absorption capability to identify what visual mangement guideline class (VMGC) is to be used The appropriate guidelines (a) through (r) follow the table

VISUAL MANAGEMENT GUIDELINE CLASSES TABLE

VQO'S/ Distance Zones	VAC low	VAC moderate	VAC high
R/Fg	1	1	2
R/Mg&Bg	3	3	3
PR/Fg	2	2	4
PR/Mg/Bg&3*	4	4	5
M/Fg	3	3	5
M/Mg/Bg&3*	6	6	7
MM/Bg&3*	7	7	7

*3 = Seldom Seen

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Visual Resource Management (A04)		VISUAL MANAGEMENT GUIDELINES (a) Manage to retain a minimum of 10% of the larger old growth Ponderosa pine Spruce-fir, and Douglas fir trees in VMGC 1 and 2 (b) Clearcutting units must not expose more than 15% of the seen area for a travel corridor in VMGC 1 (c) Clearcutting units must not expose more than 20% of the seen area for a travel corridor in VMGC 2 and 3 (d) Clearcutting units must not expose more than 25% of the seen area for a travel corridor in VMGC 4 and 5 (e) Develop corridor or viewshed reports for all travel corridors in VMGC 1,2,and 3 before starting ground disturbing activities (f) Cutting units must not dominate natural patterns of form, line, color, and texture in VMGC 1,2, 3,4,and 5 (g) Cutting lines may dominate natural patterns but must repeat natural form, line, color, and texture in VMGC 6 and 7 (h) Manage to retain or improve diversity of understory size and species in VMGC 1 and 2 (i) All ground disturbances to be returned to natural appearances where feasible in all VMGC's (j) Stump height to be held to the minimum possible in visible areas in VMGC 1 and 2 (k) Provide diversity of species and age classes in VMGC 2,3,4, 5,6 and 7 (l) Landings are to be located out-

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Visual Resource Management (A04)		side seen areas or rehabilitated after timber sale in VMGC 1, 2,3,4 and 5 (m) Gravel, borrow and stockpile areas to be excluded from seen areas in VMGC 1 and 2 (n) Roads must not dominate natural patterns of form, line, color, and texture within clearcut areas one year after cutting in VMGC 1,2,3,4, and 5 (o) All cut and fill slopes to be revegetated in VMGC 3,4,5,and 6 (p) Utility right-of-way clearing to conform with natural vegetative pattern in all VMGC's (q) Overhead utility lines to be screened where possible; where seen transmission towers will be of naturally harmonious colors in VMGC 1,2,3,4,and 5 (r) All seen buildings will be of naturally harmonious colors in VMGC 1 and 2 (8021GM) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Visual Resource Management (A04)	02 Rehabilitate all existing projects and areas which do not meet the adopted visual quality objective(s) (VQO) specified for each management area Set priorities for rehabilitation, considering the following a Relative importance of the area and the amount of deviation from the adopted VQO Foreground areas have highest priority; b Length of time it will take natural processes to reduce the visual impacts so that they meet the adopted VQO; c Length of time it will take rehabilitation measures to meet the adopted VQO, and d Benefits to other resource management objectives to accomplish rehabilitation (0363) (FDR)	
	03 Achieve enhancement of landscapes through addition, subtraction or alteration of elements of the landscape such as vegetation, rockform, water features or structures Examples of these include a Addition of vegetation species to introduce unique form, color or texture to existing vegetation b Vegetation manipulation to open up vistas or screen out undesirable views (0364) (FDR)	
	04 Plan, design and locate vegetation manipulation in a scale which retains the color and texture of the characteristic landscape, borrowing directional emphasis of form and line from natural features (0365) (FDR)	a Meet the Visual Quality Objectives of retention and partial retention one full growing season after completion of a project Meet modification and maximum modification objectives three full growing seasons after completion of a project (6259) (FDR) b Visual quality Objective may be changed for a period of time as an interim guide if it is needed

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF: Visual Resource Management (A04)		to meet a final goal of the adopted VQO (8025GM) (FDR)
	05 Blend soil disturbance into natural topography to achieve a natural appearance, reduce erosion and rehabilitate ground cover (0366) (FDR)	
	06 Revegetate disturbed soils In large projects, this may have to be done in stages (0456) (FDR)	a Revegetate disturbed soils by the following growing season (6276) (FDR)
	07 Choose facility and structure design, color of materials, location and orientation to meet the adopted visual quality objective(s) for the management area (0367) (FDR)	
Recreation Site Construction and Rehabilitation (A05 AND 06)	01 Provide appropriate development facilities where the private sector is not meeting the demand (0441) (FDR)	
	02 Maintain cost-effective developed recreation facilities which complement non-Forest Service developments (0442) (FDR)	
	03 Provide facilities which are accessable to handicapped persons (0443) (FDR)	
	04 Facilities proposed for construction or reconstruction which lie within identified 100-year floodplains will be evaluated as to the specific flood hazards and values involved with the site Viable alternatives will be thoroughly evaluated (0728) (FDR)	a Follow procedures and guidelines in FSM 2527 04c (6632) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Recreation Site Construction and Rehabilitation (A05 AND 06)	05 Past and probable flood heights in inventoried 100-year floodplains will be posted to provide visable warnings to the using public about possible periodic flooding (0730) (FDR)	a Follow procedures and guidelines in FSM 2527 6 (6634) (FDR)
Management of Developed Recreation Sites (A08, 09, 11 & 13)	01 Design, construct and operate developed sites which are adjacent to or provide an access point into a wilderness to complement wilderness management objectives (0350) (FDR)	
	02 Construct, reconstruct and maintain developed sites in accordance with the established Recreation Opportunity Spectrum (ROS) classification for the management area (0348) (FDR)	a Standards and Guidlines

ROS Class*	Site Development . Scale**
P	Not to exceed 1
SPNM	Not to exceed 2
SPM	Not to exceed 2
RN	Class 3 or 4
R	Class 3 or 4
U	Class 5

* P = Primitive
SPNM = Semi-primitive non-motorized
SPM = Semi-primitive motorized
RN = Roaded Natural
R = Rural
U = Urban
** FSM 2331 47
(6193) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Management of Developed Recreation Sites (A08, 09, 11 & 13)	03 Manage development scale 3 and 4 sites for full service when at least one of the following are met a A campground is designated as a fee site; b More than 20 percent of theoretical capacity is being utilized; c A group campground or picnic ground has a reservation system and/or user fee; or d The site is a swimming site, a boating site with a constructed ramp, or a staffed visitor information center (0349) (FDR)	a FSM 2331 47 (6652) (FDR)
Dispersed Recreation Management (A14 and 15)	01 Provide a broad spectrum of dispersed recreation opportunities in accordance with the established Recreation Opportunity Spectrum (ROS) classification for the management area (0351) (FDR)	
	02 Close or rehabilitate dispersed sites where unacceptable environmental damage is occurring (0040) (FDR)	a Close sites that cannot be maintained in Frissell Condition Class 1, 2, or 3 (Campsite Condition, Frissell, S S , Journal of Forestry August 1978) (6023) (FDR) b Rehabilitate sites that are in Frissell condition classes 4 or 5 (8022GM) (FDR)
	03 Manage dispersed recreation activities to not exceed the established ROS PAOT/acre capacity Manage use of trails in dispersed areas to not exceed the established PAOT/mile of trail guidelines (0352) (FDR)	a Standards and Guidelines Recreation use and capacity range during the snow-free period (PAOT/acre) Trail use and capacity range (PAOT/mile of trail) Capacity Range Use Level: Very Low, Low, Moderate, High

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Dispersed Recreation Management (A14 and 15)		ROS class - Primitive
		On Trails PAOT/Mile 0 5 1 0 2 0 3 0
		Area wide PAOT/acre 001 002 007 025
		ROS Class - Semi-Primitive *Nonmotorized*
		On Trails PAOT/mile 2 0 3 0 9 0 11 0
		Area-wide PAOT/acre 004 008 05 08
		ROS Class - Semi-Primitive Motorized
		On Trails PAOT/mile 2 0 3 0 9 0 11 0
		Area-wide PAOT/acre 004 008 05 08
		ROS Class - Roaded Natural
		On Trails PAOT/mile - - - -
		Area-wide PAOT/acre 04 08 1 2 2 5
		ROS Class - Rural
		On Trails PAOT/mile - - - -
		Area-wide PAOT/acre 5 8 5 0 7 5
		Reduce the above use level coefficients as necessary to reflect

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Dispersed Recreation Management (A14 and 15)		usable acres, patterns of use, and general attractiveness of the specific management area type as described in the ROS Users Guide, Chapter 25 Reduce the above use levels where unacceptable changes to the bio-physical resources will occur - * VERY LOW applies to alpine LOW applies to rock, mtn grass, and clearcuts 1-20 years old MODERATE applies to LP size class 9, mtn grass, PP size class 9,8 and 7, DF size class 9,8 and 7, Aspen size class 9, SF size class 7, shelterwood cuts 90-120 years old, selection cuts 1-20 years old and clearcuts 80-120 years old HIGH applies to SF size class 9 and 8, LP size class 8 and 7, Aspen size class 8 and 7 and clearcuts 20-80 years old (6195) (FDR)
	04 Prohibit camping within a minimum of 100 feet from lakes and streams unless exceptions are justified by terrain or specific design which protects the riparian and aquatic ecosystems (0353) (FDR)	
	05 Manage resource activities and facilities in accordance with the Regional Acceptable Work Standards . (0391) (FDR)	a FSM 1310 R2 ID No 1 7/22/82 (6194) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Recreation Management (Private and Other Public Sector) (A16)	01 Ensure that permitted private and public sector sites on Forest Service lands which are adjacent to, or provide an access point into, a wilderness complement wilderness management objectives (0457) (FDR)	
Wilderness Area Management (B02)	01 Do not provide interpretive facilities at cultural resources sites, nor restore or enhance cultural resources for recreation purposes (0172) (FDR)	
	02 Permit only those uses authorized by wilderness legislation, which cannot be reasonably met on non-Wilderness lands (0211) (FDR)	
	03 Provide opportunities for human isolation, solitude, self-reliance and challenge while traveling cross-country and on system trails (0191) (FDR)	
	04 Utilize a permit system to manage use levels and patterns during the summer use period based upon the following criteria a When acceptable use levels, as specified in the individual prescriptions, are exceeded during 20 percent of the summer use season, or b When acceptable capacities, as specified in the individual prescriptions, in primitive or pristine management areas are exceeded on 10 percent or more of the days during the summer use season c Apply a permit system to an entire wilderness, not just impacted portions of a wilderness (0192) (FDR)	
	05 Do not impose party-size limits during traditionally light-use seasons or during fall hunting seasons unless necessary to prevent unacceptable levels of change to the biological and physical resources (0193) (FDR)	

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Wilderness Area Management (B02)	06 Maximum party-size limit for the summer use period is 25 people and/or recreational stock Party size limits less than 25 people and/or recreational stock will be established where biological and physical resource capability cannot support that level of use Party sizes established for protection of biophysical resources will set limits for both people and recreational stock Parties larger than established limits may be allowed under permit on a case-by-case basis when compatible with other wilderness management objectives (0194) (FDR)	
	07 Prohibit competitive contest events, group demonstrations, ceremonies, and other similar events (0209) (FDR)	
	08 Prohibit dogs, or require them to be physically controlled on a leash Exceptions will be made for permittee's working dogs, and for hunting dogs while hunting during legal seasons (0202) (FDR)	
	09 Prohibit recreational stock along lake shores and streambanks except for watering and through-travel (0204) (FDR)	
	10 Require users camping overnight with recreational stock to carry cubed, pelleted, or rolled feed and/or certified weed-free hay where grazing is prohibited (0176) (FDR)	
	11 Control overnight grazing of recreational stock in alpine and Krummholz ecosystems according to use standards in Management Activity D02, Forest Direction (0206) (FDR)	a Base range condition on the standards in Range Analysis Handbook (FSH 2209 21) (6156) (FDR) b Allowable soil disturbance criteria 20% maximum disturbance on ranges with good-excellent soil stability condition on 0-15% slopes 15% maximum disturbance on ranges with fair soil stability conditions on slopes less than 15% and good

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Wilderness Area Management (B02)		or better soil stability conditions on slopes of 16-25% 10% maximum disturbance on ranges with fair soil stability conditions on slopes of 16-25%, and good soil stability conditions on slopes of 26-45% (6280) (FDR)
	12 Prohibit new range improvement structures other than corrals, fences or water developments essential to sustain current permitted numbers (0221) (FDR)	
	13 Implement revegetation only for rehabilitation of areas in less than "fair" range condition based upon their natural potential Use only native species for revegetation Implement only where natural vegetation possibilities are poor, and only where degradation was due to human activities (0177) (FDR)	a Base range condition on the standards in Range Analysis Handbook (FSH 2209 21) (6156) (FDR)
	14 Permit fish and wildlife research and management utilizing guidelines adopted by the International Association of Fish and Wildlife Agencies (FSM 2323 3) (0179) (FDR)	
	15 See Mining Law Compliance and Administration and Minerals Management Activities in Forest Direction for minerals direction (0476) (FDR)	
	16 Close or rehabilitate dispersed sites where unacceptable environmental damage is occurring (0040) (FDR)	a Close sites that cannot be maintained in Frissell Condition Class 1, 2, or 3 (Campsite Condition, Frissell, S S , Journal of Forestry August 1978) (6023) (FDR) b Rehabilitate sites that are in Frissell condition classes 4 or 5 (8022GM) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Wilderness Area Management (B02)	17 Suppress man-caused wildfires (0186) (FDR)	
	18 Maintain fire-dependent ecosystems using prescribed fires ignited naturally Reclaim areas disturbed as part of fire control activities to meet the visual quality objective of retention (0187) (FDR)	a Allow natural occuring fires to burn under approved wilderness fire area management plan (8040GM) (FDR)
	19 Protect air quality related values from adverse effects from air pollution (0188) (FDR)	a See criteria and standards in FSM 2120 (6286) (FDR)
	20 Control natural insect or disease outbreaks in wilderness only when justified by predicted loss of resource values outside of wilderness Conduct analysis in accordance with FSM 3430 (0190) (FDR)	
	21 Control problem animals on a case-by-case basis in cooperation with other agencies (FSM 2610) using methods directed at the offending animal but which present the least risk to other wildlife, and/or visitors (0180) (FDR)	
Wildlife and Fish Resource Management (C01)	01 Manage for habitat needs of indicator species (0408) (FDR)	a Deer & Elk Provide hiding cover within 1000 feet of calving areas On spring, summer and fall ranges the optimum mix of cover is 25% hiding cover; 15% thermal cover; 10% hiding or thermal cover and 50% forage areas (8061GM) (FDR)
		b Pine Marten (old growth spruce-fir) Opening created should be less than 300 feet in width Provide diversity of forest communities (8062GM) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Wildlife and Fish Resource Management (CO1)		c Red Crossbill (mature spruce-fir) Provide at least 20% of the area in trees bearing cones (8063GM) (FDR)
		d Hairy Woodpecker (mature Lodgepole pine) Provide 3-5 snags/acre Protect those snags with cavities when they are located within 100 yards of 4-wheel drive access Leave live broken trees in preference to others in snag selection (8064GM) (FDR)
		e Goshawk (mature aspen) Provide 20% of pole or mature tree stands adjacent to nesting sites with at least 150 square feet of basal area Provide at least one class 1 log adjacent to nesting sites (8065GM) (FDR)
		f. Lewis Woodpecker (mature mountain shrub Provide 3-5 snags/acre of size class 8 and 9 for cavities Protect snags with cavities within 100 yards of 4-wheel drive roads (8066GM) (FDR)
		g Abert Squirrel (mature ponderosa pine) Leave at least two 19-20" DBH trees per 5 acres for nesting and feeding -Provide a group of smaller trees directly adjacent to nesting and feeding trees for hiding cover -Leave tree size gambel oak in association with Ponderosa Pine (8067GM) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Wildlife and Fish Resource Management (C01)		h Sage Grouse (late succession sagebrush) -Avoid any vegetation management within 1/2 mile of known strutting areas -Follow FSM 2631 management guides (8068GM) (FDR)
		i Pinyon Jay (mature pinyon pine Juniper) -Leave 3-4 seed bearing trees/acre for feeding and nesting (8069GM) (FDR)
		j Bighorn sheep -Make permanent openings in conifer type 10-15 acres in size in established summer range (8070GM) (FDR)
		k Deer, Elk, Black Bear, Goshawk In areas of historic shortage of dry season water, where there is less than one source per section, create one source per section. (8071GM) (FDR)
	02 Maintain habitat for viable populations of all existing vertebrate wildlife species (0289) (FDR)	a Habitat for each species on the forest will be maintained at least at 40 percent or more of potential (6289) (FDR)
	03 Manage waters capable of supporting self-sustaining trout populations to provide for those populations (0290) (FDR)	a Manage stream habitat to 90% of potential where existing self sustaining fishery occurs Management activities which cause unfavorable conditions in existing fishery will include mitigation measures in project proposal (8074GM) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Wildlife and Fish Resource Management (C01)	04 Manage and provide habitat for recovery of endangered and threatened species as specified in the Regional Forester's 1920 (2670) letter dated June 25, 1982 (0740) (FDR)	
	05 Manage and provide habitat for the sensitive species, Uncompahgre Fritillary Butterfly (Boloria acronema) and Braya humilus spp Ventosa (no common name) where they occur (2070GM) (FDR)	
Wildlife Habitat Improvement and Maintenance (C02, 04, 05 and 06)	01 Use both commercial and noncommercial silvicultural practices to accomplish wildlife habitat objectives (0051) (FDR)	a In forested areas, maintain deer or elk hiding cover on 60 percent or more of the perimeter of all natural openings, all created openings and along at least 75 percent of the edge of arterial and collector roads and 40 percent along streams and rivers Not more than one half of the hiding cover can be contiguous to another portion of the hiding cover Along streams and rivers in addition to hiding cover, 20 percent or more of the edge must be in thermal cover (6188) (FDR) b In diversity units dominated by forested ecosystems, maintain a minimum of 40 percent of the diversity unit in deer or elk hiding cover This hiding cover should be well distributed over the unit Maintain 20 percent of the diversity unit in thermal cover (winter or spring-summer) Hiding cover can be used to meet thermal cover requirements also, if they indeed coincide biologically (6312) (FDR) c In diversity units domi-

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Wildlife Habitat Improvement and Maintenance (C02, 04, 05 and 06)		nated by non-forested ecosystems, maintain deer and elk hiding cover as follows % of Unit Forested — % of Forested Area In Cover 35-50 — at least 50% 20-34 — at least 60% less than 20 — at least 75% These levels may be exceeded temporarily during periods when stands are being regenerated to meet the cover standard, or to correct tree disease problems, in aspen stands, or where windthrow or wildfire occurred Maintain hiding cover along at least 75 percent of the edge of arterial and collector roads, and at least 60 percent along streams and rivers, where trees occur (6660) (FDR)
		d Alter age classes of browse stands in a diversity unit, no more than 25 percent within a ten-year period (6146) (FDR)
	02 Improve habitat capability through direct treatments of vegetation, soil, and waters (0337) (FDR)	
	03 Conduct habitat improvement projects jointly or cooperatively funded with the States (0339) (FDR)	
	04 Maintain edge contrast of at least medium or high between tree stands created by even-aged management (0448) (FDR)	a Contrast by Age Class is Contrast** Age Class* D — S S G — S h G r

CONTINUATION OF
Wildlife
Habitat
Improvement and
Maintenance
(C02, 04, 05
and 06)

	G	M	P	S	F	r	a
OG	-	L	M	H	H	M	H
M	L	-	M	M	H	M	H
P	M	M	-	M	H	M	H
SSS	H	M	M	-	L	L	L
GF	H	H	H	L	-	M	L
Shr	M	M	M	L	M	-	M
Gra	H	H	H	L	L	M	-

* OG = Old Growth
M = Mature
P = Poles
SSS = Shrub-seedling-sapling
GF = Grass-forb
Shr = Shrubland
Gra = Grassland

** H = High contrast
M = Medium contrast
L = Low contrast
(6265) (FDR)

05 Provide conservation pools in all reservoir construction and reconstruction projects
(2066GM) (FDR)

Wildlife and Fish Cooperation With Other Agencies (C12)

01 Manage animal damage in cooperation with the State Wildlife Agencies, Fish and Wildlife Service, other appropriate agencies, and cooperators to prevent or reduce damage to other resources and direct control toward preventing damage or removing only the offending animal
(0097) (FDR)

02 Allow denning or aerial gunning only for the purpose of animal damage control and under the following conditions

a Methods are specified in the Forest Animal Control Plan;
b Denning and aerial gunning is done by an authorized individual; and
c The permit is issued by the State for aerial gunning
(0098) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Range Resource Management (D02)	01 Provide forage to sustain local dependent livestock industry as well as wildlife populations agreed to in Statewide Comprehensive Wildlife Management Plans for National Forest System lands (0055) (FDR)	
	02 Remove livestock for the remainder of the grazing season from allotments managed under a continuous grazing system when further utilization on key areas will exceed allowable use criteria for the season (0057) (FDR)	
	03 Manage livestock and wild herbivores forage use by implementing allowable use guides (0058) (FDR)	a Livestock and wild herbivores allowable forage use by grazing system and range type are 1 Rest Rotation System a Use by range type -Mainly seed Reproduction (Bunchgrass, plains grassland, foothills shrub and alpine range types) 50-60 percent on heavy use pastures Up to 45 percent on light use pastures -Mainly vegetation reproduction (meadow, sandhill prairie, bluegrass bottoms, and aspen range types) Bluegrass maximum up to 80 percent; others, 55-65 percent on heavy use pastures, 40-50 percent on light use pastures -Wild herbivores use during spring in rest-pastures will not exceed 25%

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Range Resource Management (D02)		b Allowable soil disturbance or recovery criteria Soil and vegetation condition must be restored to at least the pre-treatment condition by the return to the same point in the grazing cycle 2 *Deferred Rotation System* a Use by range type -Mainly seed Reproduction 40-50 percent on all pastures -Mainly vegetation reproduction 45-55 percent on all pastures b Allowable soil disturbance or recovery criteria Soil and vegetation conditions must be restored to at least the pre-treatment condition by the return to the same point in the grazing cycle 3 Rotation System a Use by range type -Mainly seed Reproduction Max of 50 percent on last used pastures; Max of 40 percent on first used pasture

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Range Resource Management (D02)		-Mainly vegetation reproduction Max of 55 percent on last used pasture Max of 45 percent on first used pasture b Allowable soil disturbance or recovery criteria. Same as deferred rotation system above 4 Continuous System (Grazing same time and place every year) -Mainly seed Reproduction

Use by Condition Class on Key Area

Season	Good and Excellent	Fair	Poor	Very Poor
Full Grazing Season or Spring	31-40%	21-30%	11-20%	0-10%
Summer	36-45%	26-35%	11-25%	0-10%
Fall and/or Winter	46-55%	31-45%	16-30%	0-15%

-Mainly vegetation reproduction

Same as primary seed reproduction except increase utilization by 10% on bluegrass

Allowable soil disturbance

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Range Resource Management (D02)		20% maximum disturbance on ranges with good-excellent soil stability condition on 0-15% slopes 15% maximum disturbance on ranges with fair soil stability condition on less than 15% slopes, and on good or better soil stability condition on 16-25% slopes 10% maximum disturbance on ranges with fair soil stability condition on 16-25% slopes, and good or better soil stability condition on 26-45% slopes 5 Alternate Years System a Use by range type on key areas -Mainly seed Reproduction

Condition Class on Key Area	Use
Good-Excellent	51-60%
Fair	36-50%
Poor	21-35%
Very Poor	0-20%

-Mainly vegetation reproduction

Condition Class on Key Area	Use
Good-Excellent	56-65%
Fair	41-55%

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Range Resource Management (D02)		Poor 31-40% Very Poor 0-30% - - - - - - - - - - - - - - - Bluegrass 80% on good or better condition and same proper use percent for fair and lower as above Soil disturbance criteria is same as for continuous grazing - - - - - - - - - - - - - - - (6041) (FDR)
	04 Achieve or maintain satisfactory range conditions on all rangelands (0499) (FDR)	
	05 Treat noxious farm weeds in the following priority a Leafy spurge, Russian and spotted knapweed; and Canada and musk thistle; b Invasion of new plant species classified as noxious farm weeds; c Infestaion in new areas; d Expansion of existing infestations of Canada and musk thistle, and other noxious farm weeds; and e Reduce acreage of current infestation (2085GM) (FDR)	
Range Improvement and Maintenance (D03, 04, 05 and 06)	01 Structural range improvement should be designed to benefit wildlife and livestock (0416) (FDR)	a Structural improvements and maintenance will be in accordance with FSH 2209 22-R2 (6277) (FDR) b Structural improvements will not adversly affect big game movement (FSH 2209 22) (6247) (FDR)
Silvicultural Prescriptions (E03, 06 & 07)	01 Provide for wildlife habitat improvement and enhancement of other renewable resources in Sale Area Improvement Plans. (0014) (FDR)	

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Silvicultural Prescriptions (E03, 06 & 07)	02 Apply a variety of silvicultural systems and harvest methods which best meet resource management objectives (0016) (FDR)	a The appropriate harvest method by forest cover type are

Forest Cover Type	Appropriate Harvest Methods* Even-aged	Uneven aged
Interior Ponderosa Pine	SW, CC &S	GS & ST
Mixed Conifer	SW & CC	GS
Aspen	CC	--
Lodgepole Pine	SW & CC	GS
Engelmann spruce-Subalpine-fir	SW & CC	GS & ST

* The following abbreviations are used for harvest methods

SW = Shelterwood
CC = Clearcut
GS = Group Selection
ST = Single tree selection
S = Seed tree

** Mixed Conifer includes Interior Douglas fir and white fir

(6007) (FDR)

b Utilization standards for live and dead material are

Species	Min DBH	Min Top Dia	Length (feet)	%Net of Gross
Live Trees - All Planning Periods				
Sawtimber				
Conifers	7 0	6 0	8	33-1/3
Aspen	7 0	6 0	8	50

CONTINUATION OF
Silvicultural
Prescriptions
(E03, 06 & 07)

Products other than Sawtimber	5 0	4 0	6 5	--

Dead Trees - All Periods

Sawtimber				
Lodgepole Pine	8 0	7 0	16	50*
Other Conifers**	12 0	10 0	16	50*
Products other than Sawtimber	5 0	4 0	variable	

*Considering all defects except weather checking Prominent checks or splits are considered defects

**Dead subalpine fir will not require removal on sawtimber sales

(8100GM) (FDR)

c Silvicultural Standards by Harvest Method
(These standards do not apply on areas managed for old growth)

1 Clearcut

Forest Cover Type	Rotation Age	Growing Stock Level	Thinning Cycle
Engelmann Spruce	100 to 180 yrs	80 to 120	10 to 30 yrs
Subalpine fir			
Lodgepole Pine	50 to 140 yrs	80 to 120	10 to 30 yrs
Aspen	80 to	NA	NA

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Silvicultural Prescriptions (E03, 06 & 07)		

Other	120 yrs 70 or more yrs	60 to 120	10 to 30 yrs

2 Two-step shelterwood

Forest Cover Type	Rotation Age	Growing Stock Level	Thinning Cycle
PP, MC, and SF	50 to 180 yrs	80 to 160	20 to 30 yrs
LP	90 to 140 yrs	80 to 120	20 to 30 yrs
Other	70 or more yrs	60 or 120	20 to 30 yrs

First Cut (seed cut)

Remove 40 to 70 percent of the Basal area or cut to Basal area (BA)

- BA 25-60 for Interior Ponderosa Pine, Mixed Conifer, and Spruce-fir;
- BA 20-40 for Lodgepole pine;
- BA 20-60 for other forest cover types

Second Cut (removal cut)

Remove all overstory when regenerated stand meets minimum stocking standards

3 Three-step shelterwood

Rotation age, growing stock level and thinning cycle is the same as two-step shelterwood

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Silvicultural Prescriptions (E03, 06 & 07)		First Cut (preparatory cut) Remove 10 to 40 percent of the basal area or Cut to BA 60-80 for Interior Ponderosa pine, Mixed conifer, and Lodgepole pine Cut to BA 50-80 for all other forest cover types - - - - - - - - - - - - - - - - - - Second Cut (seed cut) Remove 40 to 50 percent of the remaining basal area or Cut to BA 25-50, 10 to 20 years after preparatory cut for Interior Ponderosa pine, Mixed conifer, and Spruce-fir; BA 20-40, 10 to 20 years after preparatory cut for Lodgepole pine; BA 20-50, 10 to 20 years after preparatory cut for other species - - - - - - - - - - - - - - - - - - Third Cut (removal cut) Remove all overstory when regenerated stand meets minimum stocking standards - - - - - - - - - - - - - - - - - - 4 Selection - - - - - - - - - - - - - - - - - - Forest Cover Type — Residual BA — Cutting Cycle - - - - - - - - - - - - - - - - - - SF and MC — 80 to 120 — 20 to 30 yrs Other — 80 to 120 — 20 to 30 yrs - - - - - - - - - - - - - - - - - -

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Silvicultural Prescriptions (E03, 06 & 07)		(6042) (FDR) d To facilitate the control of soil erosion within acceptable tolerance 1 Permit conventional logging equipment on slopes of less than 20 percent where soil surveys or site-specific soil data are unavailable 2 Allow conventional logging equipment on slopes up to 40 percent where soil surveys or site-specific soil data are available to design erosion mitigation needs 3 Utilize high flotation equipment on slopes up to 60 percent or cable and aerial systems on any slope (6314) (FDR)
	03 Clearcuts may be applied to dwarf mistletoe infected stands of any forest cover type (0138) (FDR) 04 Assure that all even-aged stands scheduled to be harvested during the planning period will generally have reached the culmination of mean annual increment of growth (0453) (FDR)	

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Silvicultural Prescriptions (E03, 06 & 07)	05 The maximum size of openings created by the application of even-aged silviculture will be 40 acres regardless of forest cover type Exceptions are a Proposals for larger openings are subject to a 60-day public review and are approved by the Regional Forester; b Larger openings are the result of natural catastrophic conditions of fire, insect or disease attack, windstorm; or c The area does not meet the definition of created openings (0017) (FDR)	a Size of openings Patch clearcuts 1-10 acres Clearcuts 10-40 acres (6073) (FDR)

CONTINUATION OF Silvicultural Prescriptions (E03, 06 & 07)

06 Acceptable management intensity activities to determine harvest levels are

Management Activity*	Engelmann Spruce-Subalpine Fir	Interior Ponderosa Pine	Lodgepole Pine	Interior Douglas-Fir and White Fir	Aspen	Other Pines	Hardwoods
Tree Improvement	X	X	X	N	N	N	X
Site Preparation	X	X	X	X	N	N	X
Reforestation							
Planting	X	X	X	X	O	N	X
Seeding	O	X	N	O	O	O	X
Natural Regeneration	X	X	X	X	X	X	X
Protection	X	X	X	X	N	N	X
Stocking Control (thinning)							
Pre-Commercial	X	X	X	X	O	X	X
Commercial	X	X	X	X	O	X	X
Salvage of Dead Material	X	X	X	X	X	N	X
Cutting Methods							
Clearcut	X	X	X	X	X	N	X
Shelterwood	X	X	N	X	O	N	X
Selection	X	X	N	X	O	X	X

*Various combinations of these activities provide the acceptable range of management intensity for timber production (36 CFR 291 2(b)(2))

X = Appropriate practice

O = Not an appropriate practice

N = Appropriate, but not a standard practice
May be acceptable where justified

(0019) (FDR)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Silvicultural Prescriptions (E03, 06 & 07)	07 Make Christmas trees available in areas where other resource objectives can be accomplished through commercial or personal use Christmas tree sales (0020) (FDR)	
Reforestation (E04)	01 Establish a satisfactory stand on cutover areas, emphasizing natural regeneration within five years after final harvest except a For permanent openings that serve specific management objectives; b When other resource objectives dictate a different period such as spruce-fir clearcuts where planting must occur within three years after harvest; c In those lodgepole pine stands where the period for natural regeneration should be extended up to seven years after clearcutting; and d When provided for otherwise in specific management prescriptions (0013.) (FDR)	a Establish a seven-year regeneration period for lodgepole pine stands meeting the following criteria (1) Natural regeneration is expected to provide satisfactory stocking within 7 years after cutting, (2) Establishment of trees is not impaired by competing vegetation, and (3) Maintenance of favorable site condition does not require additional site preparation (6005) (FDR) b MINIMUM STOCKING STANDARDS BY PRODUCTIVITY AND FOREST COVER TYPE

Forest Cover Type	Site Prod (Cu Ft /A/Yr)	Planting 1/ Densities (Trees/A)
Spruce-fir	85+	360-680
	50-84	360-540
	20-49	300
Aspen	all	---
Mixed Conifer	85+	435-680
	50-84	435-550
	20-49	300-360
Lodgepole Pine	85+	360-680
	50-84	360-540
	20-49	300

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES

CONTINUATION OF
Reforestation
(E04)

Ponderosa Pine	85+	435-680
	50-84	435-550
	20-49	300-360

Forest Cover Type	Seedling Stocking Per Acre Min 2/	Desir 3/
Spruce-fir	200	340
	200	280
	150	155
Aspen	300	600
Mixed Conifer	205	310
	205	255
	190	240
Lodgepole Pine	245	340
	200	280
	150	250
Ponderosa Pine	205	310
	205	255
	190	240

Forest Cover Type	Percent of Plots or Transects That are Stocked Minimum	Desired
Spruce-fir	75	100
	75	100
	75	100
Aspen	75	100
Mixed Conifer	75	100
	75	100
	75	100
Lodgepole Pine	75	100
	75	100
	75	100
Ponderosa Pine	70	100
	70	100

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES

CONTINUATION OF
Reforestation
(E04)

Forest Cover Type	Seedling Height (Inches) Minimum (70)	Desired (100)
Spruce-fir	3"	18"
Aspen	12"	45"
Mixed Conifer	3"	18"
Lodgepole Pine	3"	18"
Ponderosa Pine	3"	18"

1/ Lower densities are recommended to meet minimum stocking standards Higher densities are recommended to meet desired stocking standards, with ample stock for selecting genetically superior trees
2/ Minimum stocking standards are to be used where no precommercial cutting will be done, and only one harvest will be made to regenerate the stand
3/ Desired stocking standards are to be used where at least one precommercial cut will be done followed by two sawlog harvests before the final cut is done (Aspen will have only one final cut)
(6006) (FDR)

02 Do not apply final shelterwood removal cut until the desired number (as specified in Minimum Stocking Standards) of well-established seedling/acre are expected to remain following overwood removal
(0142) (FDR)

03 Use trees of the best genetic quality available which are adapted to the planting site when supplemental planting (Reference FSM 2475)
(0141) (FDR *)

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Timber Stand Improvement (E05)	01 Utilize Christmas tree sales for stocking controls where the opportunity exists (0015) (FDR)	
Riparian Area Management (F03)	01 Also see Management Prescription 9A for riparian area management (0404) (FDR)	
	02 Design and implement activities in management areas to protect and manage the riparian ecosystem (0401) (FDR)	a Maintain all riparian ecosystems in at least an upper mid-seral successional stage based upon the R2 Riparian Ecosystem Rating System (6147) (FDR)
	03 Manage riparian areas to reach the latest seral stage possible within the stated objectives (0402) (FDR)	
	04 Prescribe silvicultural and livestock grazing systems to achieve riparian area objectives (0403) (FDR)	
	05 Locate, and construct all roads to maintain the basic natural condition and character of riparian areas (2120GM) (FDR)	
Water Uses Management (F04)	01 Determine and obtain rights to instream flow volumes to protect and maintain stream channel stability and capacity and to accomplish any proposed increase in use or resource activity (0009) (FDR)	
	02 Protest water right applications of others when such uses will lower streamflows below levels acceptable for National Forest uses and purposes (0602) (FDR)	
	03 Special Use Permits, easements, rights-of-way, and similar authorizations for use of NFS lands shall contain conditions and stipulations to maintain instream or bypass flows necessary to fulfill all National Forest uses and purposes (0604) (FDR)	

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Water Resource Improvement and Maintenance (F05 and 06)	01 Maintain instream flows and protect public property and resources (0010) (FDR)	
	02 Improve or maintain water quality to meet State water quality standards However, where the natural background water pollutants cause degradation, it is not necessary to implement improvement actions Short-term or temporary failure to meet some parameters of the State standard, such as increased sediment from road crossing construction or water resource development may be permitted in special cases (0005) (FDR)	
	03 Develop a schedule of water yield treatments within fourth-order watersheds which attains desired water yield increases while maintaining stream channel stability (0606) (FDR)	a Provide mitigation measures necessary to prevent increased sediment yields from exceeding "threshold limits" (as determined by "State of the Art" modeling ^HYSED! or actual measurements) identified for each (fourth-order) watershed (6320) (FDR)
	04 Rehabilitate disturbed areas that are contributing sediment directly to perennial streams as a result of management activities to maintain water quality and re-establish vegetation cover (0676) (FDR)	a Reduce to natural rate any erosion due to management activity in the season of disturbance and sediment yields within one year of the activity through necessary mitigation measures such as water-barring and revegetation (6606) (FDR)
	05 Prevent or reduce debris accumulations in riparian areas that reduce stream channel stability and capacity (0307) (FDR)	
	06 Prevent soil surface compaction and disturbance in riparian ecosystems Allow use of heavy construction equipment for construction, residue removal, etc , during periods when the soil is least susceptible to compaction or rutting (0003) (FDR)	a Proposed land-use facilities (roads, campgrounds, buildings) should not be located within floodplain boundaries for the 100-year flood Protect present and future facilities that cannot be located out of the 100-year

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Water Resource Improvement and Maintenance (F05 and 06)		floodplain by structural mitigation (deflection structures, riprap, etc) (6051) (FDR)
	07 Limit use of herbicides, insecticides, rodenticides, or other chemical agents as part of management activities to times and places where possible transport to or by surface water has a low probability of occurrence Follow all label requirements concerning water quality protection (0678) (FDR)	
Minerals Management General (G00)	01 Administer areas with producing sites and known reserves with consideration of ongoing and potential mineral activities (0640) (FDR)	
	02 Avoid or minimize capital investments, such as developed recreation, in or adjacent to areas with known reserves and alienated mineral rights (0642) (FDR)	
	03 In areas of actively producing sites or areas containing known reserves, consider only surface resource programs compatible with minerals activities (0644) (FDR)	
	04 In areas of high to moderate potential for valuable mineral deposits, perform site-specific mineral evaluations prior to making substantial capital investments, such as recreational developments (0646) (FDR)	

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Mining Law Compliance and Administration (G01)	01 Prevent or control adverse impacts on surface resources in accordance with 36 CFR 228 a Unclassified lands Provide for reclamation of disturbed lands to achieve the planned uses specified in the Forest Plan, when those lands are no longer needed for mining operations b Designated Wilderness, Congressionally designated Wilderness Study Areas, and areas recommended for wilderness designation by RARE II on which Congressional action has not been completed Provide for reasonable access of the type necessary to the purpose of proposed operations and for restoration of disturbed lands as near as practical to their natural condition when they are no longer needed for operations c Other classified lands not withdrawn from operations under the General Mining Laws Such lands may include Research Natural Areas, National Recreation Areas, "RARE II" Further Planning Areas, Special Interest Areas such as scenic and geologic, National Historic Sites, or some other type of specific classification The status of classified lands with respect to withdrawal must be checked before an operating plan can be approved Provide for reasonable protection of the purposes for which the lands were classified and for reclamation of disturbed lands to a condition suitable for the purposes for which the lands were classified (0025) (FDR) 02 Withdrawals must be for the purpose of protecting specific existing or proposed uses Initiate actions for withdrawal from entry under the General Mining Laws when 36 CFR 228 and other applicable laws and regulations will not provide the opportunity for protection of surface resources and uses (0026) (FDR)	

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Mining Law Compliance and Administration (G01)	03 Review cases of suspected abuse of the mining laws such as occupancy of the land for purposes other than prospecting, mining and related operations Initiate appropriate actions to resolve First action should be administrative Failure of such action requires examination of claims for validity, followed by appropriate contest proceedings or legal action (0027) (FDR)	
Minerals Management-Oil, Gas and Geothermal (G02 and 04)	01 Withdrawals of lands from operations of the mineral leasing acts will be requested only in exceptional situations because Federal decisions on mineral disposals under these acts are discretionary on a case-by-case basis (0029) (FDR)	

CONTINUATION OF, Minerals Management-Oil, Gas and Geothermal (G02 and 04)

02 Recommendations for or consent to issuance of leases or permits may include lands up to one-half mile within a "no lease" area, subject to no surface use or occupancy on the "no lease" lands Forest Service (R-2) Supplement F to Form 3109-3, "Surface Use or Occupancy Stipulation", will apply to such "no lease" lands "No lease" criteria appear under major land type headings below

1 Unclassified Lands

a Forest Service authorization of geophysical prospecting will include terms and conditions controlling operating methods and times to prevent or control adverse impacts on surface resources and uses

b Recommendations for and consent to BLM issuance of leases and permits will include all current standard stipulations and the Regionally approved special stipulations that may be necessary for additional protection of specific surface resources and uses Reclamation requirements will have the objective of returning disturbed lands to the planned uses These standard and current Regionally-approved special stipulations are in Appendix H to this Forest Plan

(1) Standard stipulations, in addition to those in the basic lease or permit document, are BLM Form 3109-3, "Stipulation for Lands Under Jurisdiction of the Department of Agriculture" and Forest Service (R-2) Supplement D to BLM Form 3109-3, "Surface Disturbance Stipulation "

(2) Special Region 2 Forest Service stipulations will be used as appropriate to the surface resource situation on the lands involved in a lease or permit These stipulations are titled as supplements to Form 3109-3 and are listed below

(a) Forest Service (R-2) Supplement C to Form 3109-3, "Limited Surface Use Stipulation " This stipulation notifies a lessee or permittee that certain described conditions exist upon the lands involved that require special operating plan provisions for their pro-

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Minerals Management-Oil, Gas and Geothermal (GD2 and 04)	tection (b) Forest Service (R-2) Supplement H to Form 3109-3, "Conditional No Surface Disturbance Stipulation " This stipulation notifies a prospective lessee or permittee that certain described conditions exist upon tracts within the proposed lease or permit area that will prevent any surface disturbance affecting those tracts unless an operating plan can be devised that will convince the Forest Service that surface use, occupancy and reclamation can take place without causing irretrievable environmental damage (c) Forest Service (R-2) Supplement G to Form 3109-3, "Activity Coordination Stipulation " This stipulation notifies the lessee that surface values exist that are sensitive to high levels of activity In such circumstances, the Forest Service may require that activities on the lease lands, when multiple leaseholds are involved, be conducted by a single operator, similar to the conduct of operations under a unitization agreement approved by the Minerals Management Service An alternative approach would be joint Forest Service/Minerals Management Service approval of a coordinated plan of operations involving multiple operators c Recommend against or deny consent to BLM for issuance of leases where operational damages on surface resources, including the impacts of surface-based access, product transportation and ancillary facilities necessary to production and related operations, would be irreversible and irretrievable, with no potential for reclamation ("no lease" lands) Negative recommendations or consent denials will be based on site-specific consideration of the following criteria (1) Slopes steeper than 60 percent (2) High erosion hazard rating (3) High geologic hazard rating (4) Low visual absorption capacity that prevents	

CONTINUATION OF
Minerals
Management-Oil,
Gas and
Geothermal
(G02 and 04)

reclamation to established visual quality objective (VQO)

(5) A conclusion by the Forest Service (FS) and\or the United States Fish and Wildlife Service (USFWS) that the action will jeopardize the survival or recovery of federally listed threatened and endangered (T&E) wildlife or plant species

(6) Intrusions upon the identified critical (USFWS) or essential (FS) habitat of a federally listed (T&E) wildlife or plant species or upon the plant or animal itself

(7) Intrusion upon the habitat of individual plant or animal species listed by a state as threatened or endangered

(8) Intrusion upon the habitat of individual plant or animal species identified by the Regional Forester as needing special management to prevent its need for listing as a threatened or endangered species

2 Designated Wilderness, Congressionally designated Wilderness Study Areas, and areas recommended for Wilderness in RARE II on which Congress has not taken final action

a Geophysical prospecting, when authorized, will be subject to terms and conditions insuring that operations will be done by methods and at such times that there will be no significant adverse impacts on surface resources

(1) Geophysical prospecting will be authorized on leased lands and on lands for which the Forest Service will recommend or consent to the issuance of leases and permits ("leasable" lands)

(2) Geophysical prospecting may be authorized

(a) For "no lease" lands (see "c " following) adjacent to leased or leasable lands when the operator can show that geophysical information is necessary for exploratory drilling, or for field development on the leased/leasable lands in the event of a discovery of producible oil, gas or geothermal resources on leased lands

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Minerals Management-Oil, Gas and Geothermal (G02 and 04)	(b) For "no lease" lands when the prospecting proponent can show that the geophysical information is necessary for extending subsurface interpretation from leased/leasable lands across "no lease" lands to other leased/leasable lands The proponent must also demonstrate that the information can be gained in no other way without significant adverse impacts on surface resources	
	b Unless there is statutory language to the contrary, in which case the statutory provisions control, recommend or consent to BLM for issuance of leases where operations, including surface-based access, product transportation and other necessary ancillary facilities, will not cause irreversible and irretrievable damage to surface resources and where the lands disturbed can be restored as near as practical to natural conditions In addition to all current standard stipulations, the following special Regional stipulation will be applied and is part of appendix H to this Forest Plan Forest Service (R-2) Supplement R to Form 3109-3, "Wilderness Stipulation " This stipulation gives notice of the special nature of the lands involved, specifies the sequence of geophysical investigations and exploratory drilling, with air mobilization for the latter; and describes the conditions that must be met for surface access should a commercial discovery be made The stipulation also provides for its automatic rescission and replacement should the Congress return the lands to nonwilderness management	
	c Recommend against or deny consent to BLM for issuance of leases where operational damages on surface resources, including the impacts of surface-based access, product transportation and ancillary facilities necessary to production and related operations, would be irreversible and irretrievable, with no potential for reclamation ("no lease" lands) Negative recommendations or consent denials will be based on site-specific consideration of the following criteria	

CONTINUATION OF
Minerals
Management-Oil,
Gas and
Geothermal
(G02 and 04)

(1) Slopes steeper than 40 percent
(2) High erosion hazard rating
(3) High geologic hazard rating
(4) Low visual absorption capacity that prevents restoration as near as practical to established visual quality (VQO)
(5) A conclusion by the Forest Service (FS) and\or the United States Fish and Wildlife Service (USFWS) that the action will jeopardize the survival or recovery of federally listed threatened or endangered (T&E) wildlife or plant species
(6) Intrusions upon the identified critical (USFWS) or essential (FS) habitat of a federally listed (T&E) wildlife or plant species or upon the plant or animal itself
(7) Intrusion upon the habitat of individual plant or animal species listed by a state as threatened or endangered
(8) Intrusion upon the habitat of individual plant or animal species identified by the Regional Forester as needing special management to prevent its need for listing as a threatened or endangered species

3 Classified lands other than Wilderness and related, as described in "2" foregoing, which are not by law or otherwise withdrawn from operations under the mineral leasing acts. Examples of such lands include Wild and Scenic River System, RARE II Further Planning Areas, National Recreation Areas, National Historic Sites, Natural Areas, Special Areas--such as geological, scenic and zoological, and some other specific classifications

a Forest Service authorize geophysical and similar prospecting only when terms and conditions can be applied that will protect the purposes for which the lands were classified

b Recommendations for and consent to BLM for issuance of leases and permits will include all current standard stipulations and the current Regionally-approved special stipulations necessary to protect the purposes for which the lands were classified Standard and special stipulations are in Appendix H to this Forest Plan

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Minerals Management-Oil, Gas and Geothermal (G02 and 04)	See 1 b(1) under this Management Activity heading, foregoing, for the standard stipulations Special stipulations to be applied as appropriate are (1) Forest Service (R-2) Supplement A to Form 3109-3, "Further Planning Area Stipulation " This stipulation applies to lands identified for further planning in the RARE II decision documents It specifies the nature and extent of operations allowed and the conditions to be met for their approval (2) Forest Service (R-2) Supplement B to Form 3109-3, "Classified Area Stipulation " This stipulation applies to lands classified under 36 CFR 251 23 and 294 1 for specific management purpose Because of the regulatory provisions, no use or occupancy inconsistent with the classification is permitted This does not necessarily mean recommendation against or denial of consent to BLM for issuance of leases The reason is that classified areas may be only small portions of large leaseholds (3) Forest Service (R-2) Supplement C to Form 3109-3, "Limited Surface Use Stipulations " This stipulation notifies a lessee or permittee that certain described conditions exist upon the lands involved that require special operating plan provisions for their protection (4) Forest Service (R-2) Supplement E to Form 3109-3, "Wild and Scenic Rivers System Stipulations " This stipulation establishes operating condition for lands under study by Congress for inclusion in the National Wild and Scenic Rivers System It also provides for establishing appropriate operational controls should the land be included in that system or should the lands not be added to the system (5) Forest Service (R-2) Supplement H to Form 3109-3, "Conditional No Surface Disturbance Stipulation " This stipulation notifies a prospective lessee that certain described conditions exist upon tracts within the proposed lease or permit	

CONTINUATION OF Minerals Management-Oil, Gas and Geothermal (G02 and 04)

area that will prevent any surface disturbance affecting those tracts unless an operating plan can be devised that will convince the Forest Service that surface use, occupancy and reclamation can take place without causing irretrievable environmental damage

(6) Forest Service (R-2) Supplement G to Form 3109-3, "Activity Coordination Stipulation " This stipulation notifies the lessee that surface values exist that are sensitive to high levels of activity In such circumstance, the Forest Service may require that activities on the lease lands, when multiple leaseholds are involved, be conducted by a single operator, similar to the conduct of operations under a unitization agreement approved by the Minerals Management Service An alternative approach would be joint Forest Service/Geological Survey approval of a plan of operations involving multiple operators

c Recommend against or deny consent to BLM for issuance of leases where operation damages on surface resources, including the impacts of surface-based access, product transportation and ancillary facilities necessary to production and related operations, would be irreversible and irretrievable, with no potential for reclamation ("no lease" lands) Negative recommendations or consent denials will be based on site-specific consideration of the following criteria

(1) Would operations destroy or irretrievably damage the characteristics or purposes for which the lands were classified?
(2) Slopes steeper than 40 percent
(3) High erosion hazard rating
(4) High geologic hazard rating
(5) Low visual absorption capacity that prevents reclamation to established visual quality objective (VQO)
(6) A conclusion by the Forest Service (FS) and\or the United States Fish and Wildlife Service (USFWS) that the action will jeopardize the survival or recovery of federally listed threatened or endangered (T&E) wildlife or plant species

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Minerals Management-Oil, Gas and Geothermal (G02 and 04)	(7) Intrusions upon the identified critical (USFWS) or essential (FS) habitat of a federally listed (T&E) wildlife or plant species or upon the plant or animal itself (8) Intrusion upon the habitat of individual plant or animal species listed by a state as threatened or endangered (9) Intrusion upon the habitat of individual plant or animal species identified by the Regional Forester as needing special management to prevent its need for listing as a threatened or endangered species (2140GM) (FDR)	
Minerals Management-Coal, Leasable Uranium and Non-Energy Common Minerals Materials (G03, 05, 06 and 07)	01 Withdrawals of lands from operations of the mineral leasing acts will be requested only in exceptional situations because Federal decisions on mineral disposals under these acts are discretionary on a case-by-case basis (0029) (FDR)	
	02 Withdrawals from disposal of common variety mineral materials are unnecessary The Forest Service has total discretionary authority for such disposals (0030) (FDR)	

CONTINUATION OF Minerals Management- Coal, Leasable Uranium and Non-Energy Common Minerals Materials (G03, 05, 06 and 07)

03 General direction for Unclassified lands, Designated Wilderness, and Classified lands other than Wilderness and related are

1 Unclassified Lands

a Forest Service authorize common variety exploration and disposals under terms and conditions to prevent or control adverse impacts on surface resources and uses The objective of reclamation requirements wil be to return disturbed lands to the planned uses

b Recommendations for and consent to BLM for issuance of leases, permits, and coal exploration licenses will include all current standard stipulations and the Regionally-approved special stipulations that may be necessary for additional protection of specific surface resources The objective of reclamation requirements will be to return disturbed lands to the planned uses The standard and current Regionally-approved special stipulations are in Appendix H to this Forest Plan

(1) Standard Stipulations, in addition to those in the basic lease, permit or license document, are BLM Form 3109-3, "Stipulation for Lands Under Jurisdiction of the Department of Agriculture," and Forest Service (R-2) stipulation, Supplement D to BLM Form 3109-3, "Surface Disturbance Stipulation "

(2) Special Forest Service, Region 2, Stipulations will be used as appropriate to the surface resource situation involved in a lease, permit or license These stipulations are titled as supplements to BLM Form 3109-3 and are listed below

(a) Forest Service (R-2) Supplement C to Form 3109-3, "Limited Surface Use Stipulations " This stipulation notifies a lessee, permittee or licensee that certain described conditions exist upon the lands involved that require special operating plan provisions for their protection

CONTINUATION OF
Minerals Management-Coal, Leasable Uranium and Non-Energy Common Minerals Materials (Q03, 05, 06 and 07)

(b) Forest Service (R-2) Supplement H to Form 3109-3, "Conditional No Surface Disturbance Stipulation " The usual application of this stipulation for minable minerals will be in exploration permits and licenses The stipulation notifies a prospective lessee, permittee or licensee that certain described conditions exist upon tracts within the proposed lease or permit area that will prevent any surface disturbance affecting those tracts unless an operating plan can be devised that will convince the Forest Service that surface use, occupancy and reclamation can take place without causing irretrievable environmental damage

c Recommend against or deny consent to BLM for issuance of leases, permits or coal exploration licenses where operational damages on surface resources, including the impacts of surface-based access, product transportation and ancillary facilities necessary to production and related operations, *would be irreversible and irretrievable, with no* potential for reclamation Negative recommendations or consent denials will be based on consideration of the following criteria

(1) Terrain as it affects waste dumps and tailings disposal--related to dump and tailing stability, adequate room for placement
(2) Whether or not negative impacts on water quality are preventable
(3) For surface-based access, product transportation and ancillary facilities necessary to operations Slopes steeper than 60 percent; high erosion hazard; high geologic hazard
(4) Low visual absorption capacity that prevents reclamation to established visual quality objective (VQO)
(5) A conclusion by the Forest Service (FS) and\or the United States Fish and Wildlife Service (USFWS) that the action will jeopardize the survival *recovery of federally listed threatened* or endangered (T&E) wildlife or plant species
(6) Intrusions upon the identified critical (USFWS) or essential (FS) habitat of a federally listed

CONTINUATION OF Minerals Management- Coal, Leasable Uranium and Non-Energy Common Minerals Materials (G03, 05, 06 and 07)

(T&E) wildlife or plant species or upon the plant or animal itself

(7) Intrusion upon the habitat or individual plant or animal species listed by a state as threatened or endangered

(8) Intrusion upon the habitat of individual plant or animal species identified by the Regional Forester as needing special management to prevent its need for listing as a threatened or endangered species

2. Designated Wilderness, Congressionally-designated Wilderness study areas, and areas recommended for Wilderness in RARE II on which Congress has not taken final action

a Prospecting for and disposals of common varieties of mineral materials will not be authorized

b Coal mining in the National Wilderness Preservation System is prohibited by the Coal Leasing Amendments Act of 1975 Therefore, coal leasing and coal exploration licenses will not be authorized for any of the foregoing described lands.

c Unless there is statutory language to the contrary, in which case the statutory provisions control, recommend, or consent to BLM for issuance of leases or permits where operations, including surface-based access, product transportation and other necessary ancillary facilities, will not cause irreversible an irretrievable damage to surface resources and where the lands disturbed can be restored as near as practical to natural conditions In addition to all current standard stipulations, the special stipulation described below will be applied; this stipulation is part of Appendix H to this Forest Plan

Forest Service (R-2) Supplement S to Form 3109-3, "Wilderness Stipulation " This stipulation provides for rigorous controls over access and all operating conditions and related facilities and operations; gives notice of the special nature of the lands involved; specifies the sequence of exploratory and other operations, with air mobilization for the former; and describes the conditions that must be

MANAGEMENT ACTIVITIES		GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF Minerals Management- Coal, Leasable Uranium and Non-Energy Common Minerals Materials (G03, 05, 06 and 07)		met for surface access should commercial discovery be made The stipulation also provides for its automatic rescission and replacement should Congress return the lands to nonwilderness management	
	d	Recommend against or deny consent to BLM for issuance of leases or permits where operational damages on surface resources, including the impacts of surface-based access, product transportation and ancillary facilities necessary to operations, would be irreversible and irretrievable, with no potential for restoration as near as practical to natural conditions Negative recommendations or consent denials will be based on consideration of the following criteria (1) Terrain as it affects waste dumps and tailings disposal--related to dump and tailing stability, adequate room for placement, and whether or not waste and tailings can be handled or treated in a manner that would allow restoration as near as practical to natural conditions (2) Whether or not negative impacts on water quality are preventable (3) For surface-based access, product transportation and ancillary facilities necessary to operations Slopes steeper than 40 percent; high erosion hazard; high geologic hazard (4) Low visual absorption capacity that prevents restoration to established visual quality objective (VQO) (5) A conclusion by the Forest Service (FS) and\or the United States Fish and Wildlife Service (USFWS) that the action will jeopardize the survival or recovery of federally listed threatened or endangered (T&E) wildlife or plant species (6) Intrusions upon the identified critical (USFWS) or essential (FS) habitat of a federally listed (T&E) wildlife or plant species or upon the plant or animal itself (7) Intrusion upon the habitat of individual plant or animal species listed by a state as threatened or endangered (8) Intrusion upon the habitat of individual plant or animal species identified by the Region-	

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al Forester as needing special management to prevent its need for listing as a threatened or endangered species

3 Classified lands other than Wilderness and related, as described in "2" foregoing, which are not by law or otherwise withdrawn from operations under the mineral leasing acts Examples of such lands include Wild and Scenic River System, RARE II Further Planning Areas, National Recreation Areas, National Historic Sites, Natural Areas, Special Areas--such as geological, scenic and zoological, and some other specific classifications

a Forest Service authorize common variety exploration and disposals under terms and conditions to protect the purposes for which the lands were classified The objective of reclamation requirements will be to return disturbed lands to a condition suitable for the purposes for which they were classified

For Special Areas classified under 36 CFR 294 and 251 23 for specific management purposes, the regulatory provisions permit no use or occupancy inconsistent with the classification

b Coal mining is prohibited by the Coal Leasing Amendment Act of 1975, within the National System of Trails and the Wild and Scenic Rivers System, including Study rivers designated by that Act This prohibition also applies to the National Park System and the National Wildlife Refuge System, which lands are not under Forest Service jurisdiction

c Recommend or consent to BLM for issuance of leases, permits or licenses only when terms and conditions can be applied that will protect the purposes for which the lands were classified

d Recommendations and consent to BLM for issuance of leases, permits or licenses will include all current standard stipulations and the current Regionally approved special stipulations necessary to protect the purposes for which the lands were classified Standard and special stipulations are in Appendix H to this Forest Plan See 1 b (1) under this management heading for the standard stipulations Special

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stipulations to be applied as appropriate are

(1) Forest Service (R-2) Supplement A to Form 3109-3, "Further Planning Area Stipulation " This stipulation applies to lands identified for further planning in the RARE II decision documents It specifies the nature and extent of operations allowed and the conditions to be met for their approval

(2) Forest Service (R-2) Supplement B to Form 3109-3 "Classified Area Stipulation " This stipulation applies to lands classified under 36 CFR 294 and 251 23 for specific management purposes Because of the regulatory provisions, no use or occupancy inconsistent with the classification is permited This does not necessarily mean recommendation against or denial of consent to issuance of leases, permits or licenses is necessary The reason is that classified areas may be only small portions of the lands involved

(3) Forest Service (R-2) Supplement C to Form 3109-3, "Limited Surface Use Stipulation " This stipulation notifies a lessee, permittee or licensee that certain described conditions exist upon the lands involved that require special operating plan provisions for their protection

(4) Forest Service (R-2) Supplement H to Form 3109-3, "Conditional No Surface Disturbance Stipulation " This stipulation notifies the prospective lessee, permittee or licensee that certain described conditions exist upon tracts within the proposed lease or permit area that will prevent any surface disturbance affecting those tracts unless a operating plan can be devised that will convince the Forest Service that surface use, occupancy and reclamation can take place without causing irretrievable environmental damage

e Recommend against or deny consent to issuance of leases, permits or licenses where operational damage on surface resources including the impacts of surface-based access, product transportation and

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ancillary facilities necessary to production and related operations, would be irreversible and irretrievable, with no potential for reclamation Negative recommendations or consent denials will be based on consideration of the following criteria

(1) Would operations destroy or irretrievably damage the characteristics or purposes for which the lands are classified?
(2) Terrain as it affects waste dumps and tailings disposal--related to dump and tailing stability, adequate room for placement, and whether or not waste and tailings can be handled or treated in a manner that results in no detrimental effects on the purposes for which the lands were classified
(3) Whether or not negative impacts on water quality are preventable
(4) For surface-based access, product transportation and ancillary facilities necessary to operations Slopes steeper than 40 percent; high erosion hazard; high geologic hazard
(5) Low visual absorption capacity that prevents reclamation to established visual quality objective (VQO)
(6) A conclusion by the Forest Service (FS) and\or the United States Fish and Wildlife Service (USFWS) that the action will jeopardize the survival recovery of federally listed threatened or endangered (T&E) wildlife or plant species
(7) Intrusions upon the identified critical (USFWS) or essential (FS) habitat of a federally listed (T&E) wildlife or plant species or upon the plant or animal itself
(8) Intrusion upon the habitat or individual plant or animal of a species listed by a state as threatened or endangered
(9) Intrusion upon the habitat or individual plant or animal of a species identified by the Regional Forester as needing special management to prevent its need for listing as a threatened or endangered species

(2141GM) (FDR)