



United States
Department of
Agriculture

Forest
Service

Southwestern
Region

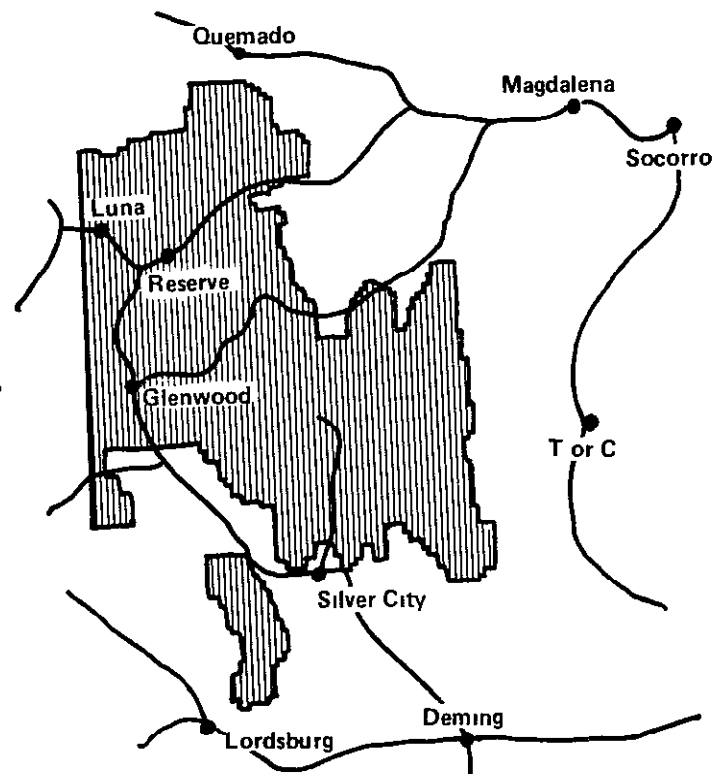
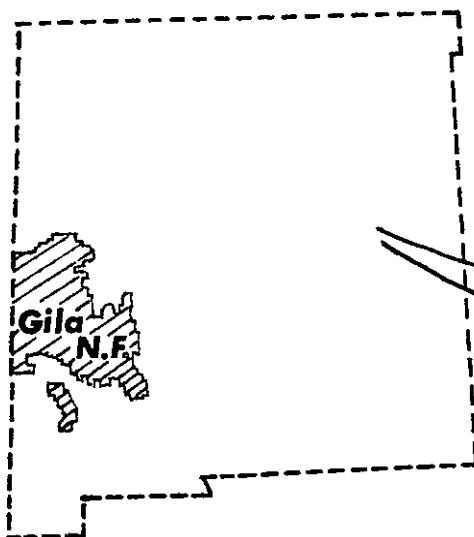
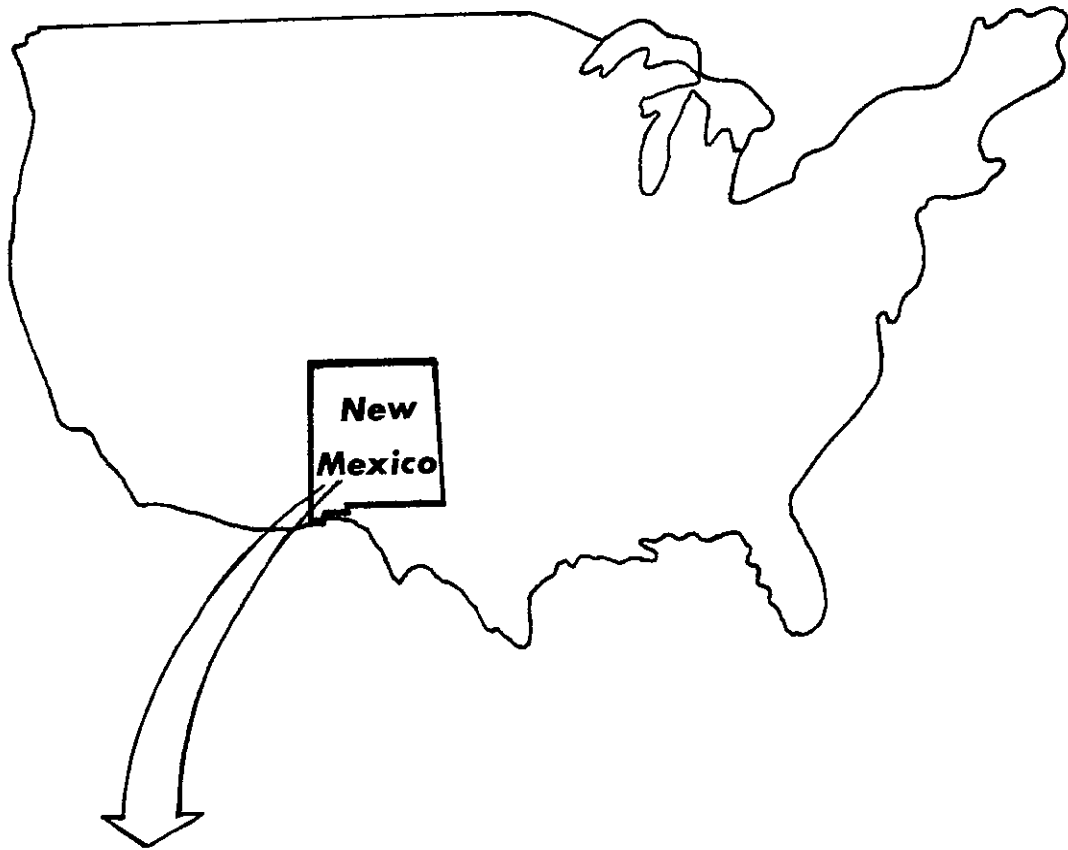
September 1986



Environmental Impact Statement, Gila National Forest Plan



VICINITY MAP



Environmental Impact Statement

Gila National Forest Land and Resource Management Plan (Proposed) Grant, Catron, Hidalgo, and Sierra Counties, New Mexico

03-04-85-1

Type of Action	Administrative
Lead Agency	USDA - Forest Service
Responsible Official	Sotero Muniz, Regional Forester
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Abstract. A Proposed Action and six alternatives for a Land and Resource Management Plan for the 3,342,607 acre Gila National Forest Administrative Unit are described and compared. The Proposed Action (PA) and alternatives are:

- PA Provides for a moderate to high degree of issue resolution within a budget constrained to reflect anticipated appropriations
- A Projects current resource management, and is the No Action Alternative as required by National Environmental Policy Act regulations. This alternative fails to adequately respond to issues
- B. Strives to meet Resource Planning Act objectives. Responds in part to issues but fails to meet developed recreation, and water yield targets
- C Intensively manages wood products and livestock forage but emphasizes livestock forage. Provides for partial resolution of issues
- D Intensively manages wood products while managing livestock forage to the level possible with a constrained budget. Provides for partial resolution of issues.
- E Intensively manages livestock forage and wildlife habitats. Provides for resolution of the range wildlife conflict issue and the partial resolution of other issues
- F Stresses amenity resources--wildlife habitat, wildlife recreation use, dispersed and developed recreation, wilderness, wild and scenic rivers, and watershed. Partially responds to issues and commodity production

The Proposed Action Alternative constitutes the Forest Service preferred alternative. The Plan will guide future management of the Forest and will ordinarily be revised on a 10-year cycle or at least every 15 years. Revisions can be made whenever necessary.

Gila National Forest Environmental Impact Statement

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1. Purpose of and Need for Action

OVERVIEW

This Environmental Impact Statement (EIS) describes a Proposed Action (Preferred Alternative) and alternatives to the Proposed Action for the future management of the land and resources of the Gila National Forest (Forest) for the next 10 to 15 years. Each alternative provides a different way to address local, regional, and national public issues and management concerns; responds to resource management opportunities; provides for use and protection of resources; and fulfills legislative requirements. Every alternative generated a different mix of goods and services from the Forest. Each alternative was evaluated to determine its potential to provide a sustained yield of goods and services in a way that maximizes long-term public benefits in an environmentally sound manner. Alternatives were evaluated as to how well they maximized net public benefits. Net public benefits (NPB) is an overall expression of the value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index. The proposed action is the alternative that, in the opinion of the Forest Service provides for a level of goods and services that maximizes long-term net public benefits and is the Forest Service Preferred Alternative.

The EIS describes the affected environment, discloses the significant environmental consequences, and responds to issues, concerns, and opportunities (ICO) of implementing the Proposed Action and Alternatives. An EIS is required by the implementing regulations for NFMA (36 Code of Federal Regulations (CFR) 219). The EIS is prepared in the format recommended in National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508). The Proposed Action is the Forest's Land and Resource Management Plan (Plan), which is a separate document. Preparation of the Plan is required by the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 as amended by the National Forest Management Act (NFMA) of 1976. For purposes of National Environmental Policy Act disclosure, the EIS and Plan are treated as combined documents [40 CFR 1506.4].

A Notice of Intent to prepare an EIS for the Plan was published in the Federal Register on February 28, 1980. In May, 1985, the draft EIS and Plan was circulated for review and comment. After the close of the comment period, the Plan was revised as necessary. The revised EIS has been filed with the Environmental Protection Agency, and made available to the public. The Regional Forester used the revised EIS in making a decision under NFMA for approval of the Plan [36 CFR 219.10(c)]. This decision is documented in a Record of Decision which accompanies the Forest Plan. The decision will not become effective until at least 30 days after the Notice of Availability for the Environmental Impact Statement, and the Record of Decision appears in the Federal Register.

OBJECTIVES

The purpose of the Plan is to provide for multiple use and sustained yield of goods and services from the Forest to maximize long-term net public benefits in an environmentally sound manner [36 CFR 219.1(c)]. The Forest Plan will accomplish these objectives by:

- Determining public issues, management concerns, and resource use and development opportunities identified at the national, regional, and local levels.

- Defining management practices appropriate to the range of resource conditions found on the Forest.

- Assigning combinations of management practices to lands for which they are most suited based on productivity and sensitivity of the land and the needs expressed in the issues and concerns.

- Specifying the resource production outputs and schedules associated with implementing specific management practices.

- Establishing standards and guidelines for resource use and protection.

Establishing monitoring standards to ensure that actual outputs and effects are consistent with those planned.

Providing a framework for project level decisions and for development of budget proposals.

Integrating individual resource planning activities.

Coordinating Forest Service planning activities with the efforts of other Federal agencies, State and local governments and Native American tribes.

Providing input to subsequent Resource Planning Act Programs and Regional Guides.

The Plan will guide management of the Forest until a new plan is prepared. Management practices and standards and guidelines in the Plan are not irreversible. When a new plan is prepared, all aspects of the Plan will be reevaluated based on improved data, monitoring results, and new or revised issues, concerns, and opportunities. A new plan will normally be prepared at 10-year intervals but must be prepared at least every 15 years. Provision for preparation of a new plan or amendment of the Plan is specified in the regulations for implementation of the National Forest Management Act of 1976 [36 CFR 219.10(f) and (g)].

The planning horizon used to estimate outputs and effects was 200 years. The displays in the EIS show data for specified portions of the planning horizon, usually the first 50 years. The planning "periods" used in the EIS are 10 years long. While long range effects have been estimated, the Plan is valid only until a new plan is prepared, thus committing the Forest to a course of action no longer than 15 years.

The Plan either incorporates, supersedes, or replaces all previous resource or land use management plans prepared for the Forest. Following approval of the Plan, all future permits, contracts, and other instruments for the use and occupancy of the Forest must be consistent with this Plan. In addition, all subsequent administrative activities affecting the Forest, including budget proposals, will be based on the Plan [36 CFR 219.10(a)].

The Plan and EIS will guide all subsequent project implementation. Specific project proposals will be tiered to the EIS [40 CFR 1508.28]. Tiering means that, if needed, future environmental documents for projects based on the Plan will summarize or incorporate by reference the issues discussed in this EIS. Environmental documents for those projects will focus on site specific issues, concerns, and opportunities unique to the project. Environmental assessments will not be prepared for projects that have been found to have limited context and intensity [40 CFR 1508.27(a) and (b)], to produce little or no effects, individually or cumulatively, to either the biological or physical components of the human environment [40 CFR 1508.14] [FSM 1951.2], or that have been addressed in other environmental documents, including this EIS.

PLANNING PROCESS

National and Regional Planning

Forest planning occurs within the overall framework of both national and regional planning as structured by the laws and implementing regulations. The National Resource Planning Act Program (RPA) sets policy, standards, guidelines, and resource production objectives in response to identified national issues, concerns, and opportunities. The RPA Program also assigns national production objectives (RPA targets) to each Forest Service Region. A Regional Guide establishes management standards and guidelines, addresses regional issues and concerns, and responds to the National Program by distributing RPA Program targets to the individual National Forests. The Southwestern Regional Guide of August 1983 provides this direction for the Forest.

The planning process is a continuously repeating process in that the information from the Forest level flows up to the national level, is incorporated in the RPA Program, and then flows back to the Forest level is incorporated in the Resource Planning Act Program, and then flows back to the Forest level. The RPA Program and Regional Guide are updated every five years.

**Forest Planning
Process**

The planning process specified in the National Forest Management Act regulations [36 CFR 219.12] was followed in development of the plan. The planning process used an interdisciplinary (ID) approach. An ID team was formed of professionals with diverse backgrounds in the physical, biological, economic, and social sciences. The ID team approach ensured that the perceptions and in-depth knowledge of different specialists were integrated into a common management plan.

The National Forest Management Act (NFMA) planning process represents a logical, rational, and trackable approach to natural resource decision making. The planning actions as described in the NFMA regulations [36 CFR 219.12(b)-(k)] and used in the planning effort are:

- Identification of purpose and need
- Development of planning criteria
- Inventory data and information collection
- Analysis of the management situation
- Formulation of alternatives
- Estimation of effects of alternatives
- Evaluation of alternatives
- Preferred alternative recommendation (Proposed Action)
- Plan approval
- Monitoring and evaluation

The implementing regulations for the National Forest Management Act [36 CFR 219] require that a number of analyses be done during the planning process in contrast to the requirements for items to be displayed in the Plan. Examples of process requirements are identification of lands not suited for timber production, suitability and potential capability for forage production, probable occurrence of minerals and potential for future mineral development, and an overview of cultural resources. The EIS and Plan are not intended to contain all of the documentation for process requirements. Complete documentation is contained in a number of files and process reports. For example, the Analysis of the Management Situation (AMS) report documents most of the planning process requirements specified in 36 CFR 219.13 through 219.26. Appendix B contains a description of the analytical process used to prepare the Plan.

Planning Records

The documents and files that chronicle the Forest planning process are available for inspection at the Forest Supervisor's Office during regular business hours. The planning records contain detailed information and criteria used in developing the Plan as required in 36 CFR 219.10(h). Planning records are incorporated by reference at appropriate points in the text and appendices of this EIS and Plan.

**Coordination of
Planning**

Planning for management of the Forest is coordinated with other land managers and private landowners. Coordination is a continuous process facilitated by the planning effort described in the EIS and Plan.

There are 91,954 acres of private land within the Forest boundary. Some of these inholdings are small scattered tracts which originated as homesteads and others are larger tracts which may have been the result of past land exchanges or lands which were not available when the Forest was proclaimed.

Notification of private landowners was attempted through advertisements in 14 local newspapers and 18 radio and TV stations within the zone of influence and through business reply mailers sent to local postal patrons within the zone. As a result of these efforts, many of the landowners became involved in the planning process.

Indian reservations are located reasonably close to the Forest. These include the Zuni Tribe, the White Mountain Apache Tribe, the Mescalero Apache Tribe, and the Navajos of the Alamo Reservation. These Native American groups were notified during the initial public involvement programs. Follow-up letters were sent requesting comments regarding the planning effort.

In addition, the pueblos of Acoma, Laguna, and the All Indian Pueblo Council were informed of the planning process. The Bureau of Indian Affairs Agency offices in New Mexico and Arizona were also informed of progress made toward completion of the EIS and Forest Plan.

All Native American groups mentioned above were asked to comment on the planning process. No comments were received.

Numerous Federal, State, county, and local agencies in the area were contacted during the initial public involvement phase in the fall 1980 and coordination has continued since that time.

Personal contacts were made with representatives of several agencies to review and discuss their planning efforts. These contacts were to identify potential areas of coordination or conflict between the Forest Plan and plans of other agencies. For example, contacts were made with:

Bureau of Land Management--Review for coordination of lands adjacent to Forest land as well as the coordination of the Hells Hole Wilderness Study Area.

State of New Mexico Economic Development--Discussion with this state organization on recreation futures.

New Mexico Department of Game and Fish--Discussion of the Gila Land Management Planning Process, the status of the Department of Game and Fish in the process, and an update of wildlife data.

United States Bureau of Reclamation--Discussion of the upper Gila water supply study and the Hooker Dam investigation.

New Mexico Natural Resources Department--Discussion of the listing of issues and concerns developed through public meetings hosted by NMNRD.

United States Department of Interior Fish and Wildlife Service--Review of Threatened and Endangered species and vegetative typing. Section 7, Endangered Species Act consultation. Their opinion is that the Proposed Management Plan for the Gila National Forest is not likely to jeopardize the continued existence of the Threatened and Endangered species on the Forest.

Southwestern New Mexico Resource Conservation and Development District--Response to process questions, status of Forest progress in the planning effort, and review of issues resulting from initial public involvement.

Appendix A provides a complete list of agencies, tribes, and organizations contacted and the results of these contacts.

Planning Area

The Gila National Forest is located in Catron, Grant, Sierra, and Hidalgo Counties in Southwestern New Mexico. The Gila contains six ranger districts: Black Range, Mimbres, Silver City, Wilderness, Glenwood, and Reserve. The New Mexico portion of the Apache National Forest located entirely in Catron County contains two ranger districts: Luna and Quemado. These lands are administered by the Gila National Forest; however, the proclaimed boundary of the Gila National Forest has not been changed to annex these lands as part of the Gila National Forest. Throughout this document, Forest land and resource data and descriptions are given as the area within the boundary of lands administered by the Gila National Forest.

Within the administrative boundary are 3.3 million acres of National Forest land. Diverse topography, elevation, and climatic conditions on the Gila create a wide variety of terrain and vegetation types. These range from semi-desert grasslands with relatively gentle topography to steep mountain slopes with spruce-fir and aspen forests. Moderately high peaks, rough deep canyons, flat mesas, large river channels, and flood plains are typical of the diversified landform. Elevations range between 4200 and almost 11,000 feet, with the average elevation being about 7000 feet.

The Black Range and Mimbres Mountains stretch over the entire length of the eastern side of the Forest. The Mogollon Mountains lie diagonally in a northwest-southeast direction in the west central portion of the Forest. They are bordered on the northwest by the Kelly, Saliz, and San Francisco Mountains and on the southeast by the Diablo and Pinos Altos Ranges. Other mountain ranges are the Gello and Mangus Mountains across the northern edge of the Forest and the Big Burro Mountains to the far southwest. The Big Burro Mountains cover most of the isolated 166,000 acre Burro Mountain division of the Forest.

The Gila and Mimbres Rivers drain the entire central portion of the Forest. Waters from the northern and most western drainages flow into the San Francisco River. The eastern slopes of the Black Range drain into the Rio Grande located to the east of the Forest.

The vicinity map, located on the back of the document cover, indicates the location of the Forest under discussion in the EIS and Plan.

PUBLIC ISSUES Issue Development

Public involvement activities for the Gila Land and Resource Management Plan were begun in November of 1979. In an effort to find an understandable format for public input, the Gila Forest employees were contacted and asked to identify issues and management concerns. This request generated 24 preliminary issues. These were organized under general topic headings (i.e. water rights, grazing, timber, wildlife). The list of topic headings with associated preliminary issue statements were presented to the Interdisciplinary Team and Management Team for review and screening in December of 1979. The revised issues were sent to the Districts and the supervisors office staff for review and a revision was drafted at the December 10-11 Management Team Meeting. On December 14 the revised list was sent to the districts and supervisors office staff for comments. No further changes were recommended therefore, these became the tentative issues and concerns that were used in the Public Involvement Workbook.

The first step in contacting the outside public was to mail cards to all people with names on existing Forest mailing lists. These people were asked if wished to be involved in the Forest's planning efforts. At the same time a news release, with a cut-off response form, was published in 16 newspapers in the Gila area of influence. These contacts resulted in 2,374 requests to be put on the mailing list.

The Public Involvement Workbook was then compiled. This workbook contained a short explanation of the planning steps and a definition of an "issue", an explanation of how public response to the tentative issues would be evaluated, a list of the preliminary issues identified by Forest Service personnel, a space to respond to these issues (including space to add additional issues and concerns), and a list of where workshops would be held. The workbook was mailed to all individuals on the mailing list and was used in the public involvement workshops. In addition to notifying people on the mailing list concerning the workshops, a schedule was published in 14 newspapers and announced on 18 radio and TV stations.

Public workshops were held at:

<u>Place</u>	<u>Date</u>	<u>No. Attended</u>
Supervisor's Office	3/13/80	40
Silver City	3/24/80	24
Reserve	3/25/80	27
Truth or Consequences	3/26/80	6
El Paso	3/27/80	30
Las Cruces	3/28/80	20
Glenwood	3/29/80	8

A total of 369 completed workbooks were received from the workshops and the mailings.

At this point, the process of coding and analyzing the response forms began. After all comments were coded and sorted, a group of Forest Service district rangers reviewed the comments for each issue as well as the additional comments on the back of the response form. They looked for additional issues that had not been identified by the Forest, the comments on the issues identified in the brochure, and the recommendations associated with the issues. From this information they formulated the issue statements for Management Team review. After the Management Team decided on the suggested recommended final issues presented in this plan, each public statement was compared to the suggested final issues to insure that all concerns recommended and proposed solutions were addressed.

The final set of issues were sent to the individuals that responded.

Appendix A contains a detailed description of the formulation of issues, concerns, and opportunities.

The planning records and other documents created during the development of the Forest Plan and Environmental Impact Statement are located at the Supervisor's Office in Silver City, New Mexico. An index and a glossary are included at the end of this document.

Issues and Opportunities Addressed

Management concerns and public issues are called issues and are described below along with opportunities addressed in the EIS and Forest Plan. They establish the scope of the EIS [40 CFR 1501.7 and 1508.25]. They have been assessed and reformatted into a local situation statement. These locally identified issues have been listed under the National or Regional Concern that they refer to or amplify.

1. Produce timber and wood fiber.

Opportunities exist for sustaining or increasing the volume of timber available from the Forest. A portion of this volume could be sustained from steep slope areas that have not been logged in the past. The amount of volume supplied, the location of timber activities and the potential conflicts with other resources are all concerns.

Projected need for fuelwood from public lands has increased in recent years. There is a limited supply of fuelwood.

2. Manage and utilize range resources and improve range grazing.

Currently, livestock use is in balance with capacity on a significant portion of the Forest, however, there are some areas where livestock use exceeds production capability. Opportunities are available to increase production capability and reduce conflicts with other resources.

3. Adjust land ownership as needed to support resource management goals.

The issue on the Gila is the expansion of communities surrounded by National Forest lands. The location and amount of these lands creates conflict.

Road and trail rights-of-way acquisition for access is not adequate to support resource management goals.

4. Provide various recreation options.

The projected need for dispersed recreation opportunities on the Gila are increasing.

Vehicle use on Forest lands, trails, and primitive roads are viewed as a right by many people, while others object to this use. The type of management and degree of restriction creates public conflict.

5. Maintain or improve fish and wildlife habitats.

Opportunities exist on the Gila to maintain or improve wildlife habitats. Habitat requirements for some wildlife species conflict with other species and other resources.

6. Construct, operate, and maintain transportation facilities.

This issue is related to the economic efficiency of the Forest. The Forest concern is road maintenance and the possible disinvestment occurring as a result of insufficient road maintenance and the impact of this situation of other resources and uses.

7. Provide for various wilderness management options.

As a result of New Mexico Wilderness legislation, two areas on the Gila (Hells Hole and Lower San Francisco) are allocated for wilderness study. The recommendation of these areas to either wilderness or nonwilderness is the issue.

8. Riparian Habitat.

This type of habitat is very important to many species of wildlife and is also important to domestic livestock and public recreation use. Although these uses can sometimes co-exist, conflicts often occur.

READER'S GUIDE

This Reader's Guide is provided to assist the reader in understanding what information is presented in subsequent chapters of the EIS. To comprehend thoroughly the implications of the EIS, the reader is asked to completely read the remainder of this document.

Chapter 2

Alternatives Including the Proposed Action. This chapter is based on information and analysis presented in Chapter 3 and Chapter 4. It presents the environmental impacts of the Proposed Action Alternative compared to other alternatives, defines the issues, and provides a basis for choice among the various options.

Chapter 3

Affected Environment. This chapter describes the environment of the area affected by the alternatives under consideration including the physical and biological setting, the socioeconomic setting, and current resource situation and management for specific resources.

Chapter 4

Environmental Consequences. This chapter discloses the environmental impacts of all alternatives, any adverse environmental effects which cannot be avoided should the Proposed Action Alternative be implemented, the relationship between short-term uses of the environment and maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the Proposed Action Alternative should it be implemented.

Chapter 5

List of Preparerers. This chapter lists people who were primarily responsible for preparing the EIS or significant background papers.

Chapter 6

Consultation With Others. This chapter lists the businesses, industries, conservation organizations, federal agencies, Native Americans, individuals, local governments and/or officials, State agencies and/or officials, and others that received the EIS and Plan or the Summary document of the EIS.

Glossary

Provides an alphabetical listing of special terms or words and their definition.

Appendix A

Presents a chronology of public involvement activities which were used to develop the issues addressed. It also includes criteria for issue development, a listing of the various publics contacted and/or consulted, and a listing of the issues.

Appendix B

Describes the analysis process used in developing the alternatives. It focuses attention on the quantitative methods used to perform the analysis.

Appendix C

Graphically illustrates the range of outputs for the various alternatives in relation to benchmarks.

Appendix D

Provides a brief description of the management emphasis that would result from implementing the alternatives to the Proposed Action.

Comparison of alternatives and evaluation of environmental impacts were based upon factors which relate to the issues, concerns, and opportunities, or to the regulatory requirements [36 CFR 249]. These factors and the relationship to regulations and the issues, concerns, and opportunities follows:

Table 1 Reader's Guide		
Headings and Evaluation Items Used In Chapters 2, 3, & 4	Unit of Measure*	Connection to ICO's & 36 CFR 219, 40 CFR 1500
<u>RECREATION</u>		
Developed Recreation	MRVD	219.21 [all factors]
Developed Sites	PAOT/Narrative	219.12(g)(3)(ii) 219.21(3)
Dispersed Recreation [NonWildlife]	MRVD	219.12(g)(3)(ii) ICO (4)
Trail Maintenance & Trailhead Construction	Miles/ Narrative	219.12(g)(ii) ICO (4)
Off-Road Vehicle Recreation	Narrative	ICO (4), 219.21(3)(g) ICO (5)
Recreation Opportunities	Narrative	219.21(3)(d), ICO (4)
Quality of Experience	Narrative	219.21(3)(d)
Coordination w/ SCORP	Narrative	219.12(c)(4)
<u>WILDERNESS</u>		
Existing Wilderness	RVD	219.18(a), 219.12(g)(3)(i) ICO (4)
Recommended Wilderness	Acres	ICO (7), NM Wilderness Act
Fire & Insect and Disease Control Needed for Wilderness and Adjacent Land Protection	Narrative	219.18(b), ICO (5)
Distribution of Use and Maximum Use Levels	Narrative	219.18(a)
<u>VISUAL</u>	Narrative	219.21(3)(f) 219.27(b)(6)
<u>FISH & WILDLIFE</u>		
Access & Dispersal Problems	Narrative	219.19(a)(4)
Effects of Fire & Pest Control	Narrative	219.19(a)(5)
Effects on T & E	Narrative	219.19(a)(7) 219.27(a)(8)
Effects on Indicator Species Habitat & Trend	Narrative	219.19(a)(2)
Maintenance of Minimum Viable Populations	Narrative	219.19, 219.27(a)(6)
T & E Habitat Improvement	Narrative	219.12(g)(3)(i)
Wildlife Recreation Use	MRVD	219.12(g)(3)(ii)
State Comprehensive Planning Objectives	Narrative	219.12(c)(4)
<u>RANGE</u>		
Permitted Use	AUM	219.12(g)(3)(i), ICO (2) ICO (5)
Capacity	AUM	ICO (2)
Management Level	Acres by Level	ICO (2)
Vegetation Manipulation	Narrative & Acres By Practice	219.15, ICO (3), ICO (1) ICO (5)
Investments	M\$	ICO (2)
Suitability, Range Condition, Trend	Acres	219.20.(a), ICO (2)

Table 1. Reader's Guide (Continued)

Headings and Evaluation Items Used In Chapters 2, 3, & 4	Unit of Measure*	Connection to ICO's & 36 CFR 219, 40 CFR 1500
TIMBER		
Land Suitability	Acres	219.13
Sawtimber Harvest	MBF	ICO (1), 219.12(g)(3)(ii) ICO (5)
Area Cable Logged	Acres	ICO (1), ICO (5)
Sawtimber Harvest Cable	MBF	ICO (1), ICO (5)
Merchantable Timber Vol.(ASQ)	MCF	219.16(a)
Long Term Sustained Yield	MCF	219.16(a)
Products	MCF	ICO (1), 219.12(g)(3)(ii)
Fuelwood Available	MBF	ICO (1), 219.12(g)(3)(ii) ICO (5)
Reforestation	Acres	ICO (1) 219.27(c)(3) 219.12(g)(3)(i)
Thinning	Acres	ICO (1), 219.27(c)(4) 219.12(g)(3)(i)
Timber Inventory	MCF	219.16(a)
Age Class	Acres	219.16(a)
Vegetation Manipulation	Acres	219.15, ICO (1), ICO (5)
Sale Volume, LTSYC & Growth	Narrative/ MBF, MCF	219.16
Silviculture	Narrative	219.15
DIVERSITY		
Plant & Animal	Narrative	219.26, 219.27(a)(5) 219.27(g)
Tree Species	Narrative	219.26, 219.27(a)(5) 219.27(g)
Timber Age Class	Acres By Age Class	219.26, 219.27(a)(5) 219.27(g)
SOIL AND WATER		
Water Yield Increase	Acre Feet	219.23(e) 219.12(g)(3)(ii)
Watershed Condition	Acres By Condition	219.23(e)
Water Quality	Narrative	219.23(d)
On Site Soil Loss	MTons & Narrative	219.23(e), ICO (1) 219.27(a)(1) 219.27(f), ICO (2) 219.27, (d)(2)(i)
CULTURAL & HISTORIC	Narrative	219.24
RESEARCH NATURAL AREAS	Area Name & Acres	219.25
MINERALS		
Probable Effects on Mineral Activity, Including Access	Narrative	219.22(f)
Withdrawals and Lease Recommendations	Narrative/ Acres	219.22(f)
FACILITIES		
Road Maintenance	Miles & Narrative	ICO (6) 219.12(g)(3)(i)
Facility Maintenance	Narrative	ICO (6) 219.12(g)(3)(i)
RESOURCE PLANNING ACT	Targets	219.12

Table 1. Reader's Guide (Continued)

Headings and Evaluation Items Used In Chapters 2, 3, & 4	Unit of Measure*	Connection to ICO's & 36 CFR 219, 40 CFR 1500
LANDS AND SPECIAL USES		
Land Exchange	Acres	ICO (3)
Rights-of-Way	Narrative	ICO (3)
Potential Wild, Scenic, and Recreation Rivers	Miles & Narrative	219.21
PROTECTION		
Fire	Narrative	219.12(h), ICO (1), ICO (5)
Integrated Pest Management	Narrative	219.12(h), 219.27(d)(3), 219.27(c)(7), ICO (1)
Air Quality	Narrative	219.27(a)(12)
RIPARIAN	Narrative	ICO (8), 219.27(e), ICO (5), ICO (4)
ECONOMIC AND SOCIAL		
Present Value of Other Costs	M\$	219.12(g)(3)(ii)
Budget	M\$	
Receipts to Federal Government	M\$	219.12(g)(3)(iii)
Income & Employment	Jobs & Income Generated	219.12(g)(3)(iii) 219.12(h)
Present Value of All Costs	M\$	219.12(g)(3)(i)
Present Value of all Benefits	M\$	219.12(g)(3)(ii)
PNV	M\$	219.12(g)(3)(ii)
Present Value of Major Cost Categories	M\$	219.12(g)(3)(i)
Present Value of Major Benefit Categories	M\$	219.12(g)(3)(ii)
Change in PNV From Max PNV Benchmark and Reasons For Change	\$ & Narrative	219.12(g)(3)(iv)
Social Effects	Narrative	219.12(h) FSM 1970

*See glossary for definition of units of measure.

2. Alternatives Including the Proposed Action

OVERVIEW

This chapter is the heart of the environmental impact statement (EIS). The Proposed Action, alternatives considered in detail, and alternatives considered but eliminated from detailed study are described. The major environmental impacts associated with the alternatives are presented in comparative form based on information and analysis presented in Chapter 3, Chapter 4, and the Appendices. The comparisons displayed were selected because they address the issues, concerns, and opportunities (ICOs) described in Chapter 1, and clearly show the major differences between the Proposed Action and the alternatives considered in detail. Also included is a summary of the process used to develop alternatives.

Alternatives described and presented in this chapter address ICOs in varying degrees. The alternatives display different ways of managing the lands and resources of the Gila National Forest. They differ from each other in the land uses and management practices which would occur on different parts of the Forest and in the scheduling of management activities.

Each alternative is a unique combination of management prescriptions and activity schedules applied to the land. As a result, each alternative would generate a different mix of goods and services for the public and a different combination of resource outputs, land uses, and environmental effects.

Space is conserved in tables by abbreviating units of 1,000 with "M". A number such as 1,500 may be displayed as 1.5 M. To calculate the actual number, multiply the number by 1,000 where the "M" notation is used. One million is designated "MM".

REGULATORY REQUIREMENTS

The process of formulating alternatives responded to a number of regulatory requirements. Regulations (40 CFR 1502.14) for implementing the procedural provisions of the National Environmental Policy Act (NEPA) require that agencies:

- Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives that were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

- Devote substantial treatment to each alternative considered in detail including the Proposed Action so reviewers may evaluate their comparative merits.

- Include reasonable alternatives not within the jurisdiction of the lead agency.

- Formulate reasonable alternatives which may require a change in existing law or policy to implement, if necessary to address a major public issue, management concern, or resource opportunity identified during the planning process.

- Include a No Action Alternative.

- Identify the agency's preferred alternative--Proposed Action.

- Include appropriate mitigation measures not already included in the Proposed Action or other alternatives.

In addition, the National Forest Management Act (NFMA) implementing regulations [36 CFR 219.12(f)] provide the following requirements for formulating alternatives:

- Alternatives shall be distributed between the minimum resource potential and the maximum resource potential to reflect to the extent practicable the full range of major commodity and environmental resource uses and values that could be produced from the Forest. Alternatives shall reflect a range of resource outputs and expenditure levels.

Alternatives shall be formulated to facilitate analysis of opportunity costs and of resource use and environmental tradeoffs among alternatives and between benchmarks and alternatives.

Alternatives shall be formulated to facilitate evaluation of the effects on present net value, benefits, and costs of achieving various outputs and values that are not assigned monetary values but that are provided at specified levels.

Alternatives shall provide different ways to address and respond to the major public issues, management concerns, and resource opportunities identified during the planning process.

At least one alternative shall be developed which responds to and incorporates the Resource Planning Act (RPA) Program tentative resource objectives for each Forest displayed in the Regional Guide.

At least one alternative shall reflect the current level of goods and services provided by the unit and the most likely amount of goods and services expected to be provided in the future if current management direction continues. Pursuant to National Environmental Policy Act (NEPA) procedures, this alternative shall be deemed the "no action" alternative.

Each alternative shall represent to the extent practicable the most cost efficient combination of management prescriptions examined that can meet the objectives established in the alternative.

Each alternative shall state at a minimum, the condition and uses that will result from long-term application of the alternative; the goods and services to be produced, the timing and flow of these resource outputs together with associated costs and benefits; resource management standards and guidelines; and the purposes of the management direction proposed.

ALTERNATIVE DEVELOPMENT PROCESS

A broad range of alternatives was formulated by the Interdisciplinary Team (ID Team) using a specific and structured analytical process as required in the planning regulations [36 CFR 219.12(e) and (f)].

Analysis Areas

For analysis purposes, the Forest was subdivided into units of land called analysis areas. Analysis areas were identified based on public issues, management concerns, resource development opportunities, biological capability, suitability for management practices, and economic factors. Analysis areas on the Gila were delineated using a two level hierarchy. The first level is defined as combinations of grazing allotments with similar management intensity potential. These are the contiguous analysis areas. They provide for the definition of the range issue as well as the potential competition with wildlife for available forage. Model analysis areas are defined within the first hierarchical level with second level identifiers that indicate whether the model analysis area is a logical timber management area (LTMA), an accessible fuelwood area, a potentially accessible fuelwood area, wilderness area, or the remainder of the first hierarchical level.

Analysis areas may contain lands that are subject to laws committing them to specific uses. These prior commitments were not changed in any alternative.

These areas are:

Gila Wilderness Area	558,065 Acres
Aldo Leopold Wilderness Area	202,016 Acres
Blue Range Area	29,304 Acres
Gila River Research Natural Area	402 Acres

Management Prescriptions

Management prescriptions are combinations of management practices, activities, standards, and guidelines designed to achieve specific multiple-use goals and objectives. Management prescriptions include all the necessary mitigation and resource coordination measures required by laws, regulations, and policies. Different management prescriptions were developed to emphasize individual

resource potentials, continue current management, manage at a reduced intensity, and address public issues and management concerns in a variety of ways. The FORPLAN model assigned the prescriptions to specific analysis areas while maximizing present net value within the limits of the constraints used to meet the goals and objectives of the benchmark or alternative. Thus, the most cost efficient prescriptions that meet the objectives were chosen for each benchmark and alternative. A number of possible management prescriptions were developed for each analysis area and are discussed in more detail in Appendix B.

Benefits and Costs

Resource outputs and costs of implementation for all management activities and practices were estimated for each combination of management prescriptions and analysis areas. Refer to Appendix B for a complete listing of the resource outputs and cost categories used in the analysis. A more complete discussion is contained in the Economic Efficiency and the Outputs Technical Reports available at the Gila National Forest Supervisor's Office.

Cost estimates for each management prescription were developed from historical records of Forest Service costs. Where significant, non-Forest Service costs were also included in the analysis.

The resource outputs that have an existing market and are sold, as well as those resource outputs which could potentially be sold, were assigned benefit values and are called "priced benefits". Timber; firewood; dispersed, developed, wildlife, and wilderness recreation; livestock grazing; and water yield were assigned benefit values. All benefit values were based on the point in the production process where the output is removed from the Forest. All values were expressed in real dollar values. Base year values are used for the entire planning horizon except where relative real changes in values have been estimated for future years. Refer to Appendix B for a complete listing of the values used.

No attempt was made to assign benefit values to any other outputs such as visual quality, threatened and endangered species, quality of recreation experience, changes in income and employment, or community lifestyles. Outputs of this type produce "nonpriced" benefits that were also considered in the analysis. Nonpriced benefits were considered as constraints or restrictions on the production of priced benefits. The purpose for this was to insure that specific levels of each nonpriced benefit was met before the production of priced benefits began.

Present Net Value

The priced benefits and the costs of all management practices and activities were used to calculate the present net value (PNV) of all alternatives considered in the analysis. PNV is the difference between the value of the priced benefits and the value of all costs discounted at four percent real discount rate [FSM 1971.71].

Analysis of present net value is a means of comparing several different investment opportunities to determine which would provide the best return for the dollar. PNV is calculated from the sum of all of the discounted benefits [the quantity of priced outputs multiplied by the benefit value] minus the sum of all discounted costs necessary to produce the priced and nonpriced outputs. The mechanical process by which all future costs and benefits are adjusted back to the present for comparison is called "discounting." The discount rate [four percent] can be thought of as the opposite of the real interest rate charged for bank loans. The discount rate was established by the Chief of the Forest Service.

Present net value is a relative indicator of economic efficiency and was used as one of the methods used to develop and compare alternatives. The objective in development of each alternative was to maximize PNV; thus, each alternative is the most economically efficient combination of management prescriptions that will achieve a given set of priced and nonpriced goals and objectives.

Net Public Benefits

The National Forest Management Act Regulations (36 CFR 219.1) describe the objective of land and resource management planning on National Forest System lands:

The resulting plans shall provide for multiple use and sustained yield of goods and services from the National Forest System in a way that maximizes long-term net public benefits in an environmentally sound manner.

Since not all costs and benefits can be priced in the analysis, present net value was not the only index used to develop, compare, and evaluate alternatives. Alternatives were evaluated to determine how well they maximized net public benefits. Net public benefits (NPB) is an overall expression of the value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index such as PNW. Alternatives having the highest PNW may not always provide the highest net public benefits when nonpriced benefits and costs are considered.

Computer Model

The goal in alternative development was to find the most economically efficient combination of management prescriptions that would achieve a given set of priced and nonpriced goals and objectives. Since there are 227 analysis areas, each having an average of 13 possible prescription levels, millions of possible combinations had to be analyzed. This would have been impossible without computer assistance.

A linear programming model called FORPLAN was used as a tool to do the millions of calculations to test possible combinations of areas, prescriptions, and schedules that would maximize economic efficiency (PNW) while meeting the priced and nonpriced goals and objectives specified for a given alternative. Goals and objectives for each alternative were determined on the basis of legal requirements, policies, issues, management concerns, and desired levels of priced and nonpriced benefits and costs.

In some cases, the FORPLAN model indicated the Forest could not be managed to meet a specific combination of objectives. The limitations of land and resources, the impact on environmental quality, or the practical limits of budgets occasionally resulted in an unfeasible solution. The interdisciplinary team then modified the objectives and made other "runs" of the computer model to find the particular combination of lands, activities, and schedules which would best meet the goals of that alternative. FORPLAN solutions were validated by the interdisciplinary team to insure that solutions represented implementable options. Because FORPLAN is only an aid for analysis that does not model all components of net public benefits, adjustments in final solutions were made by the interdisciplinary team based on professional expertise and prior experience. While the alternatives may not exactly match final FORPLAN solutions, relative differences between alternatives have not been affected. Refer to Appendix B for a more detailed discussion of the FORPLAN model and constraints used.

Benchmark Formulation

One phase of the analysis leading to formulation of alternatives was the development of benchmarks. A benchmark is an alternative which defines the limits of feasibility for the management and utilization of Forest resources. Benchmarks were designed to emphasize the production of individual resource outputs, to maximize economic efficiency, and to define the least intensive level of management. Benchmarks encompass the ranges of possibility from which alternatives can be developed.

Many of the first planning actions involved the creation of benchmarks and the inspection of their outputs, costs, and assumptions. Benchmarks are similar to alternatives in that they are a combination of land capability, management practices, and schedules to achieve certain objectives for the Forest as a whole. Unlike alternatives, they are usually not fully implementable because they lack consideration of likely budgets, specific geographic location, and other details. They do provide significant information about the maximum biological and economic production opportunities and they assist in evaluating the compatibilities and conflicts between market and nonmarket objectives. They define the range within which integrated alternatives will be developed.

Some benchmarks are economically based, while others indicate the maximum physical productivity of land for various resources. In these benchmark analyses, each option must include meeting minimum management requirements of 36 CFR 219.27, such as protecting the productivity of the land and meeting minimum air and water quality standards. Benchmarks are described further in Appendix B.

Analysis of the Management Situation

During the Analysis of the Management Situation (AMS), the Forest's current management situation was compared and evaluated against the Forest's potential to supply goods and services as demonstrated by the maximum benchmarks. This analysis provided a basis for evaluating the need for management changes and developing alternatives. The AMS contains much of the documentation for procedural requirements specified in 36 CFR 219, particularly the requirements to be covered in the planning process.

Alternative Formulation

Appendix B contains greater detail concerning the formulation of alternatives. The Gila National Forest Technical Report on minimum management requirements (available at the Forest Supervisors office) explains how minimum management requirements were considered.

In brief, the interdisciplinary team formulated alternatives by:

Developing a broad range of prescriptions representing minimum to maximum resource production potentials and expenditures within management requirements designed to protect and enhance long term productivity.

Formulating benchmark alternatives to define the feasible decision space within which alternatives considered in detail would be developed.

Defining goals and objectives for tentative alternatives considered in detail based upon the range of outputs determined by benchmarks; issues and concerns to be addressed and opportunities presented; cost efficiency; financial feasibility and; nonpriced public benefits.

Refining tentative alternatives into alternatives considered in detail by analyzing results for achievement of goals and objectives, optimum integration and production, cost efficiency, financial feasibility, and production of public benefits.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

This section deals with those alternatives considered and subsequently eliminated from further study. These alternatives were generated as benchmarks, departures from nondeclining timber yield, or as other alternatives considered but not evaluated in detail in the EIS. The reasons they were not considered in detail are presented.

Benchmarks

Because benchmarks define the limits of feasibility, they were considered as potential alternatives and were used as a basis for developing other alternatives. Except for Current, none of the benchmarks were evaluated in detail in the EIS. The Maximize PNW Assigned Values Benchmark was used as a standard in a number of comparisons between alternatives. Costs and outputs are also displayed and compared with the alternatives considered in detail for the Minimum Level, the Maximum Timber, and the Maximum Range Benchmarks. Refer to Appendices B and C for additional detail on benchmarks and the range of alternatives established by benchmarks.

Minimum Level

The purpose of the minimum level benchmark is to estimate naturally occurring outputs and unavoidable costs of maintaining the Forest as part of the National Forest System. This benchmark enables controllable outputs and discretionary costs to be identified. The minimum level is a Forest-wide management strategy that would meet the following statutory requirements: 1) administration of unavoidable, nondiscretionary land uses; 2) prevention of impairment of the productivity of the land; and 3) protection of the life, health, and safety of incidental users. The sum of these activities defines the long-term fixed costs of public ownership.

The minimum level benchmark was eliminated from further study because it did not conform to existing legislation governing management and use of the Forest, nor did it address issues and concerns. Although eliminated from further study, the benchmark does provide a basis for comparing base costs and benefits with those alternatives considered in detail.

The minimum level was not modeled in FORPLAN. Outputs and costs were estimated by resource specialists outside the model.

Low Intensity/ Budget

The purpose of this benchmark is to determine outputs and costs associated with managing the Forest at a low intensity level and/or reduced budget level. This alternative was not considered in detail because the level of management does not respond to the issues and concerns. This benchmark meets only minimum management standards. Developed recreation sites are operated at reduced service levels and will be closed when they deteriorate below minimum health and safety standards. Trails will be closed as they deteriorate below safe use level or cause excessive erosion. Wilderness is not managed resulting in significant deterioration of the wilderness resource and experience. Timber production is significantly reduced since harvest is limited primarily to currently roaded areas. There is little new construction or reconstruction of roads. Grazing capacity and permitted livestock use decline as management is allowed to decrease and improvements needed for maintenance of capacity deteriorate. Use and capacity balance significantly below current levels in Period 3. Soil and watershed treatment work is not accomplished and wildlife habitat is not enhanced.

Maximize Single Resources

These benchmarks maximize production of a single resource while maximizing present net value. They were developed for timber, range grazing capacity, recreation, water yield, and watershed condition. As each single resource was maximized, the other resources generally occurred at low intensity or maximum present net value (PNV) levels. The benchmarks were developed to determine the Forest's potential to produce goods and services and to evaluate the Forest's potential to resolve issues, concerns, and opportunities. They were utilized to guide the formulation and analysis of all alternatives.

Single resource benchmarks were eliminated from detailed analysis because each alternative responded to only a few public issues while other resources would be managed at low intensity levels. Few constraints were placed on the model during the analyses. Therefore, combinations of budgets and prescriptions assigned by the model for each of these benchmarks may not represent feasible solutions. The National Forest Management Act requires that the Forest Plan provide for multiple use and sustained yield of products and services in accordance with the Multiple Use Sustained Yield Act of 1960. Maximizing a single resource does not satisfy this requirement.

Maximize Present Net Value

Three benchmarks were modeled which maximize present net value. The first, Max Present Net Value Market, maximized present net value with market values for timber products, fuelwood sold, permitted livestock use, and developed recreation visitor days. The second benchmark, Max Present Net Value Assigned Values, maximized present net value for resources with market values as well as those with assigned values for water yield; dispersed, wildlife, and wilderness recreation visitor days; and free personal use firewood. The third present net value benchmark, Max Present Net Value Assigned Values with sequential lower and upper bounds (SLUB), was calculated the same as the second present net value benchmark with the addition of the sequential low and upper bounds constraint. The intent of the sequential lower and upper bounds constraint was to allow a 25 percent increase or decrease (departure) in sawtimber volumes harvested in each subsequent decade.

The Max Present Net Value Assigned Values Benchmark is used as a comparison in the Economic Factors and Present Net Value Tradeoff sections of this chapter.

The max present net value benchmarks were not considered in detail because these alternatives met only the cost efficiency criteria. These benchmarks emphasize wildlife and timber outputs to the detriment of the other resources. The low management level in wilderness caused deterioration of the resource and experience level. Soil erosion and watershed conditions are not addressed. In addition, the budget is far in excess of anticipated levels.

High Amenity
Output

This alternative was modeled to evaluate the impact of nonmarket (amenity value) outputs. The alternative was constrained to select maximum wildlife prescriptions on the forestwide analysis area. The first objective was to maximize all nonmarket outputs and the second objective was to maximize present net value.

The High Amenity Output alternative was not considered in detail because it emphasized nonmarket outputs too heavily. The result was greatly reduced timber outputs. Total sawtimber scheduled for harvest in the first decade was less than five million board feet (MMBF) per year. This level is not acceptable as a timber output for an alternative considered in detail because of the resulting negative impact to the timber industry and the local economy dependent on timber products. Health and vigor of stands would deteriorate over time to a point where risk of insect and disease epidemic would be high. Fuelwood availability would be low. The risk of fire would increase over time.

High Amenity
Low Wilderness

This alternative was developed to evaluate the impact of a low wilderness amenity emphasis alternative. The Wilderness Study Areas were not considered for addition to the National Wilderness System.

The High Amenity Low Wilderness Alternative was not considered in detail because there was not enough difference in wilderness outputs between this alternative and Alternative F to justify the completion of a separate and additional alternative.

High Commodity
Low Range

This alternative was developed as a commodity emphasis alternative that would achieved a higher than current level of sawtimber at the regionally designated constrained budget level. In an effort to achieve the desired level of timber volume, the level of permitted grazing use was reduced to 340,000 animal unit months by the fifth time period. The remaining commodity outputs were unchanged.

This High Commodity Low Range Alternative was not considered in detail because of the low level of permitted grazing and because timber did not come close enough to the upper end of the decision space. The budget was increased slightly in an attempt to obtain the desired level of commodity outputs representative of a commodity emphasis alternative considered in detail. This allowed the option of eliminating the High Commodity Low Range alternative from further consideration.

Unevenaged Management
Timber

An unevenaged management alternative was considered, but not in detail. Wildlife habitat objectives could not be met and diversity goals could not be achieved. Dwarf mistletoe would increase substantially. It would also be an economically inefficient alternative.

No Steep Slope
Logging

On the request of the Sierra Club, an alternative was developed that did not propose logging of steep slope areas. This alternative projected the harvest of approximately 35 MMBF from 285,000 suitable acres.

The No Steep Slope Logging Alternative was not considered in detail because of its long term effects on unroaded areas and because logging both steep slope and 0 to 40 percent slopes on some portions of the Forest is a more cost effective method of providing the volume needed. If this alternative were implemented for 50 years, all of the Logical Timber Management Areas on the Forest would be entered. This would have a significant effect on the remaining unroaded areas and would not adequately addressed the Sierra Club concern regarding roading unroaded portions of the Forest. The No Steep Slope Logging Alternative would also result in logging 13 percent more acres in the first decade than the Proposed Action Alternative (adjusted to reflect similar volumes).

Variation of
Proposed Action
With no Steep Slope
and Unroaded Area
Logging in First
Decade

The Sierra Club also requested that we consider a variation to the Proposed Action Alternative in which no steep slope areas and no unroaded areas were logged in the first decade. Analysis of this alternative showed that it is biologically possible to provide needed volume while delaying the entry of steep slope and unroaded areas for 10 years.

Even though this alternative was not displayed in detail, the knowledge that needed volumes could be gotten from developed areas was used in the formulation of the final Proposed Action Alternative.

The alternative was not considered in detail because while it was possible biologically to delay entry into steep slope and unroaded areas for 10 years, it was not administratively or economically feasible to do this in the Proposed Action Alternative. The preparation of timber sales is a 3 to 5 year process. Several of the timber sales planned for the next 1 to 3 years were in unroaded areas. A considerable investment has been made in the preparation of these sales. If these areas were abandoned, many of these timber sale preparation dollars would be lost. In addition, the loss of timber sale preparation time would result in an unacceptably small timber sale program for the first 3 years of the planning period.

Sales were planned in unroaded areas because these areas were released for non-wilderness multiple uses in the 1980 New Mexico Wilderness Bill and because the development of these areas was not identified as a public issue during the land management planning issue identification process. Sales have been conducted in unroaded areas in the past and no public concerns were expressed.

The elimination of steep slope (cable logging areas) was also not considered feasible for a Proposed Action Alternative. The combination of steep slope logging and tractor logging is the most cost efficient harvest method in some areas and results in less road construction and less long term development of presently unroaded areas.

Departure from
Proposed Action

Deviation from the nondeclining yield policy was considered as an alternative. The departure alternative was based on the Proposed Action Alternative. It was eliminated from detailed study because none of the criteria for departure were applicable. See Appendix B.

ALTERNATIVES
CONSIDERED IN
DETAIL

Every alternative considered in detail meets the requirements of the National Forest Management Act (NFMA) regulations and provides goods and services at a level responsive to all or part of the issues while maximizing present net value. Appendix B describes the model constraints used in formulating the alternatives considered in detail and the benchmarks. Variations of alternatives were, in four instances, alternatives not considered in detail.

The following assumptions were common to alternatives:

The minimum legal management requirements specified in 36 CFR 219.27 were met in accomplishing goals and objectives of the alternative and include:

1) protection of soil and water resources; 2) maintenance of habitat to assure viable fish and wildlife populations; and 3) maintenance and improvement of T&E species habitat.

All alternatives provide for continuation of the existing electronic sites and power corridors.

All alternatives provide for maintenance of wilderness quality in wilderness study areas until Congress acts on the recommendations.

All alternatives provide lands for the expansion of communities surrounded by National Forest System lands.

Pending establishment reports, all alternatives provide for protection and study of the following potential Research Natural Areas: 1) Turkey Creek in analysis area 8B is 1335 acres and features riparian hardwood as a major ecosystem; 2) Rabbit Trap in analysis area 7A is 297 acres and features scrub grassland; 3) Largo Mesa in analysis area 9A is 300 acres and features classic pinyon-juniper woodland; and 4) Agua Fria Mountain in analysis area 9B is 350 acres and features mountains grassland as a major ecosystem.

In addition to the assumptions listed above, the following harvest constraints were common to all alternatives to comply with requirements of 36 CFR 219.16(a)(1), (a)(2)(iii), and (a)(2)(iv): Nondeclining yield (NDY); Allowable

Sale Quantity-Long Term Sustained Yield Capacity Link (ASQ-LTSYC); Harvest of even-aged stands at or beyond Culmination of Mean Annual Increment (CMAI), and Perpetual Timber Harvest (Ending Inventory).

All issues except Issue 3 developed during the scoping process and the response to objectives assigned in the Regional Guide are addressed differently in the alternatives. Resolution of Issue 3 is provided for in all alternatives. These differing emphases are reflected in the varying mix of management prescription assignments among alternatives.

The location of prescription assignments for the Proposed Action and other alternatives is illustrated on a map in the packet which accompanies this document. Appendix D describes the management areas and emphases for each alternative and how analysis areas are grouped into management areas.

**Range of
Alternatives
Considered**

The alternatives considered were developed within the resource production levels, both minimum and maximum, established by the benchmarks. The Low Intensity Benchmark established the base level, with subsequent alternatives providing outputs at or above this level. The maximum single resource benchmarks formed the cutoff level for outputs at the upper end of the decision space. As objectives for alternatives were formulated, the output levels for each resource were determined by consulting the range of outputs established by the benchmarks. Limits for each resource were considered by alternative to insure outputs fell within the range or decision space established by the benchmarks. The alternatives considered represent a broad range of reasonable alternatives. Minimum management requirements were included in all alternatives. (For more detail see the Gila Technical report on minimum management requirements available at the Gila National Forest Supervisors office). A display of the range and relative ranking of the alternatives within the decision space is contained in Appendix C.

**Proposed Action
[Preferred]
Alternative**

The Proposed Action was designed to resolve major issues and management concerns with a mix of both market and nonmarket uses and outputs. Emphasis is on providing a balance of recreation, wilderness, wildlife and fish habitat, water quality, visual quality, range, and timber.

This alternative is consistent with multiple use considerations and at the same time, addresses issues and concerns identified during the scoping process and in the review of the Draft Environmental Impact Statement and Draft Plan. This alternative will provide the highest level of response to Forest and Regional objectives in line with budgetary constraints.

**Wilderness Study
Areas**

Neither of the two existing wilderness study areas are proposed for inclusion into the Wilderness System under the Proposed Action Alternative.

**Wild & Scenic
Rivers**

Two river systems have been named by the National Park Service as qualified for classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers. Neither of the rivers are proposed for inclusion into the Wild and Scenic Rivers Program under the Proposed Action Alternative.

Recreation

The alternative will provide for the satisfactory maintenance of all dispersed recreation facilities. The second period will include an additional increase in use in developed recreation resulting from new facilities constructed during the first time period. Overall, funding levels will be adequate to insure a moderate to high quality of experience for developed, dispersed, and wilderness recreation. The alternative will provide for the maintenance of a high level of semi-primitive recreation opportunities within presently undeveloped portions of the Forest. Of the 699,000 unroaded acres on the Forest, 678,000 will be managed to maintain semi-primitive recreation opportunities through the first decade.

Wildlife and Fish

This alternative provides a moderate increase in wildlife habitat diversity and carrying capacity. Primary habitat improvement is directed toward big game and game fish species. Nongame species requiring high serial stage vegetation will benefit from the relatively large old growth areas that will be maintained. Herbaceous forage and cover is expected to increase 30 percent by the end of the fifth period. Coniferous habitat will decrease approximately 10 percent, but

distribution is expected to improve. Increases in threatened and endangered species habitat improvements would occur. Total wildlife recreation visitor days for the first decade are 317,000. Wildlife recreation visitor days would increase to 355,000 by the fifth decade.

Range

The objective is to continue to improve the range condition on the Forest and to improve range management. In order to accomplish this objective, the management areas found to be above existing capacity will be addressed through the range environmental analysis process and a balance of permitted numbers with capacity will result. This alternative projects a reduction from the 1980 permitted use level of 383,000 animal unit months to approximately 347,000 animal unit months by the end of the first decade. Range capacity will increase in areas found to have the potential for increasing animal unit months on a cost effective basis. Capacity will be increased from the current level of 315,000 animal unit months (based on most current allotment analysis information) to approximately 330,000 animal unit months by the end of the first decade. In the second decade, use and capacity will be balanced. In the long term, capacity and permitted numbers will be managed to sustain approximately 350,000 animal unit months of domestic livestock use.

Timber

The objective is to manage suitable timber lands to meet the historical demanded level for timber products. The first decade sale schedule of 30 million board feet (MMBF) per year is 3 percent below the Current Alternative level and is equal to the average volume sold over the last 10 to 15 years. The allowable sale quantity of 8,326 million cubic feet (MCF) would be sustained through the fifth decade. Of the total average annual first decade volume, 11 MMBF per year is mixed conifer and the remaining 19 MMBF per year is Ponderosa pine. In the first decade five MMBF per year is scheduled to be harvested using the cable logging method. No sales are scheduled on slopes lengths greater than 2000 feet until the second decade. Fuelwood harvested in the first decade is 12 MMBF and increases to 15 MMBF by the fifth decade.

Socioeconomic

The Proposed Action Alternative includes a budget constraint in the first decade. Annual expenditures in the first decade are approximately \$7.9 million and \$8.4 million in the second decade. Annual receipts are \$3.6 million in the first decade. Discounted costs are \$234 million and benefits are \$474 million.

The distribution of discounted costs is:

Administration/Other	\$48.3 million
Timber Management	\$42.1 million
Recreation/Wildlife	\$23.5 million
Range Management	\$24.2 million
Protection	\$75.1 million
Roads/FA & O	\$20.9 million

The distribution of discounted benefits is:

Recreation/Wildlife	\$327.9 million
Sawtimber/Products/Fuelwood	\$ 74.0 million
Range	\$ 72.5 million

This alternative would not result in a significant change in total jobs dependent on Forest outputs over the 1977 base year level. Even though total jobs do not change, projected livestock reduction could result in economic hardship on some individuals and could make some livestock operations uneconomical. Because there is no method of determining the point where individuals can no longer operate, the resulting loss of employment may not be accurately included in the analysis.

Alternative A (No Action)

This alternative was designed to continue the current program consistent with existing management plans, policies, standards and guidelines; and to provide resource outputs consistent with current budget levels. Pursuant to the National Environmental Policy Act procedures, this alternative shall be called the "No Action" alternative.

The objective of this alternative is to establish a base of comparison for all other alternatives by projecting current management direction and practices into the future while managing on an annual constrained budget for periods one and two. This budget is based on the Forest's 1980 fiscal year planned budget. This alternative is the same as the current level benchmark and is based on the assumption that current management will continue. The FORPLAN model was constrained to select only current level prescriptions.

Wilderness Study Areas

Neither of the two existing wilderness study areas are proposed for inclusion into the Wilderness System under the Current Action Alternative. Both would be managed to maintain their wilderness character.

Wild & Scenic Rivers

Two river systems have been named by the National Park Service as qualified for classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers. Neither of the rivers are proposed for inclusion into the Wild and Scenic Rivers Program under the Current Management (No Action) Alternative.

Recreation

Developed use will continue to increase for the first decade. The second decade will remain stable at zero growth as older facilities begin to deteriorate due to assumed funding limitations. In the third through the fifth periods, a shifting of maintenance funds will result in the closing of certain lower priority sites enabling more effective management of the more popular sites. Developed recreation increases from 171,000 recreation visitor days in the first decade to 191,000 recreation visitor days in the second decade, then drops to 172,000 in the third decade and continues to down to 139,000 recreation visitor days by the fifth decade.

Funding levels are expected to be sufficient to allow for satisfactory maintenance of most wilderness and dispersed recreation facilities. Dispersed recreation recreation visitor days are expected to increase from 448,000 in the first decade to 968,000 by the fifth decade while wilderness recreation visitor days are anticipated to increase from 87,000 to 117,000 by the fifth decade. Of the 699,000 unroaded acres on the Forest, 649,500 acres would remain unroaded and available for semi-primitive recreation through the first decade.

Wildlife & Fish

Since only current prescriptions were used in this alternative, a decline in recreation visitor days can be expected due to the reduction in habitat diversity and carrying capacity. Wildlife recreation decreased from 310,000 recreation visitor days in decade one to 277,000 in the second decade and would continue to decline to 243,000 recreation visitor days by the fifth decade.

Range

In the Current Management Alternative, the only funds available for construction and reconstruction of range improvements are expected to be range betterment funds (the portion of range fees that is returned to the Forest for range improvements). These funds would not be sufficient to reconstruct all existing facilities when they need reconstruction. The result would be a reduction in grazing capacity over time. In order to continue to improve the range on the Forest, permitted numbers would decline to meet the declining capacity.

Permitted grazing is projected to decrease from a 1980 level of 383,000 animal unit months to 338,000 animal unit months by the end of the first decade. Permitted numbers would be equal to a capacity of 299,000 animal unit months by the end of the third decade and are projected to decline along with capacity to 289,000 animal unit months by the fifth decade. Exact numbers would be determined by using standard allotment analysis techniques.

Timber

Under current management, timber is managed at a moderately intensive level, but with liberal consideration for multiple use and other resource values. Refer to the Outputs Technical Report--Timber Section--for details concerning the assumptions for current timber management intensity.

Total average annual sawtimber for the first decade is 31 MMBF and increases to 46 MMBF by the fifth decade. Of this, 15 MMBF is mixed conifer and 16 MMBF is ponderosa pine. A total of 9 MMBF is scheduled to be harvested from steep slopes using cable harvest methods. Fuelwood increases from 8 MMBF in the first decade to 11 MMBF by the fifth decade.

Socioeconomic

The Current Level (No Action) Alternative includes a budget constraint in the first and second decades. Annual expenditures in the first and second decades are approximately \$7.8 million. Annual receipts are \$3.7 million in the first decade. Over the 200 year planning horizon, discounted costs are \$252 million and benefits are \$444 million. The distribution of discounted costs is:

Administration/Other	\$47.1 million
Timber Management	\$72.8 million
Recreation/Wildlife	\$14.6 million
Range Management	\$16.9 million
Protection	\$81.2 million
Roads/FA & O	\$19.6 million

The distribution of discounted benefits is:

Recreation/Wildlife	\$292.8 million
Sawtimber/Products/Fuelwood	\$ 86.7 million
Range	\$ 65.2 million

Alternative B (RPA)

The outputs from this alternative were designed to meet or exceed targets assigned to the Forest in the Regional Guide. These targets were developed for the 1980 Resource Planning Act (RPA) Program. Table 82 displays targets for this alternative. Issues, concerns, and opportunities are generally comprised of local regional, and national topics. This alternative deals more with the regional and national topics as viewed during the 1985 RPA Assessment. The alternative was designed to come as close as possible to meeting the RPA targets. Target levels were not assigned for support activities such as reforestation and TSI. It was determined that the level assigned should be the level necessary to meet the primary output targets at minimum costs.

Wilderness Study Areas

Neither of the two existing wilderness study areas are proposed for inclusion to the Wilderness System under the RPA Alternative.

Wild & Scenic Rivers

Two river systems have been named by the National Park Service as qualified for classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers. Neither of the rivers are proposed for inclusion into the Wild and Scenic Rivers Program under the RPA Alternative.

Recreation

The objective of this alternative is to meet or exceed the targets assigned by the Regional Guide. The alternative provides adequate maintenance and replacement funding for expected growth in developed recreation use. In addition, funds for new developments and staffing are provided. Maintenance will be satisfactory for all wilderness and dispersed recreation facilities. Developed recreation increases from 171,000 recreation visitor days in the first decade to 275,000 in the fifth. Dispersed recreation increases from 448,000 recreation visitor days in the first decade to 968,000 by the fifth. Wilderness recreation increases from 87,000 to 117,000 recreation visitor days between the first and the fifth decades. With the exception of developed recreation, the alternative outputs exceed the targets. Of the 699,000 unroaded acres on the Forest, 674,700 acres would remain unroaded and available for semi-primitive recreation through the first decade.

Wildlife & Fish

Herbaceous forage and cover habitats are expected to increase by 22 percent by the fifth decade. Coniferous habitats will decrease by approximately 20 percent. Habitat coordination and distribution would result in a moderately low increase in habitat diversity and carrying capacity. Wildlife recreation visitor days increase from 297,000 in the first decade to 350,000 in the fifth decade.

Range

The RPA target for permitted use increases from 331,000 animal unit months in the first decade to 354,000 animal unit months by the fifth decade. Range management maintains current capacity while improving the capacity of those allotments where a potential for increase exists. Permitted use is scheduled to increase from 349,000 animal unit months in the first decade to 354,000 animal unit months by the fifth decade. Permitted use and capacity are balanced by the end of Period 2 at 345,000 animal unit months.

Timber

The objective is to meet the RPA target set by the Regional Guide. The majority of the suitable acres go to a maximum timber management intensity. Total sawtimber scheduled in this alternative is 37 MMBF in the first decade and increases slightly to 38 MMBF by the fifth decade. Of the first decade total, 15 MMBF will be mixed conifer, and the remaining 22 MMBF will be ponderosa pine. The first decade total includes 7 MMBF to be harvested from steep slope areas using the cable logging method. Total fuelwood taken is expected to range from 10 MMBF in the first decade to 15 MMBF in the fifth decade. See the Timber Section of the Outputs Technical Report for specific details concerning the timber emphasis level associated with this section.

Socioeconomic

The RPA Alternative is the only alternative considered in detail that does not include a budget constraint. Annual expenditures in the first decade are approximately \$9.2 million, while annual expenditures in the second decade are \$8.5 million. Annual receipts are \$4.2 million in the first decade. Over the 200-year planning horizon, discounted costs are \$298 million and benefits are \$492 million. The distribution of discounted costs is:

Administration/Other	\$50.3 million
Timber Management	\$72.3 million
Recreation/Wildlife	\$33.0 million
Range Management	\$27.0 million
Protection	\$88.3 million
Roads/FA & O	\$26.7 million

The distribution of discounted benefits is:

Recreation/Wildlife	\$324.9 million
Sawtimber/Products/Fuelwood	\$ 94.4 million
Range	\$ 72.6 million

The implementation of this alternative could potentially result in approximately a 4.7 percent increase in jobs over the 1977 base year level.

Alternative C Commodity Emphasis outputs having [Range]

Alternative C emphasizes market opportunities, particularly range outputs. The alternative was developed to maximize present net value with an emphasis on market values (sawtimber and timber related products, permitted livestock use, and developed recreation). Management for other resources is maintained at feasible levels consistent with the emphasis on market oriented outputs. The emphasis on commodity production causes a reduction in amenity resources. Wildlife habitat and dispersed recreation improvement work is limited. Objectives specific to this alternative include:

Achieve a level of permitted use (grazing) above the permitted numbers presently being grazed on the Forest, by the third period.

To harvest as much sawtimber as possible within the limits set by other commodity outputs objectives.

To provide public benefits that emphasize priced benefits and quantifiable outputs.

Wilderness Study Areas

Neither of the two existing wilderness study areas are proposed for inclusion in the Wilderness System under the Commodity Emphasis (Range) Alternative.

Wild & Scenic Rivers

Two river systems have been named by the National Park Service as qualified for classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers. Neither of the rivers are proposed for inclusion into the Wild and Scenic Rivers Program under the Commodity Emphasis (Range) Alternative.

Recreation

Developed use will continue to increase for the first decade. The second decade will remain stable at zero growth as older facilities begin to deteriorate due to assumed funding limitations. In the third through the fifth periods, a shift of maintenance funds will result in the closure of certain lower priority sites enabling more effective management of the more popular sites. Developed recreation use would increase from 171,000 recreation visitor days in the first decade to 181,000 in the second, then drop to 172,000 in the third, and down to 139,000 recreation visitor days by the fifth decade.

Maintenance will be satisfactory for most wilderness and dispersed recreation facilities. Dispersed recreation is expected to increase from 448,000 recreation visitor days in the first decade to 966,000 by the fifth decade. Wilderness recreation visitor days are anticipated to increase from 87,000 in the first decade to 117,000 by the fifth decade. Of the 699,000 unroaded acres on the Forest, 683,600 acres would remain unroaded and available for semi-primitive recreation through the first decade.

Wildlife & Fish

In this alternative approximately two-thirds of the acreage goes to a low wildlife emphasis. This emphasis will maintain minimum legal requirements for wildlife species diversity and distribution of habitats. Surveys and assessments are primarily accomplished through coordination with other resource activities. Wildlife waters and other wildlife improvements will decline as unimproved improvements drop out. Most of the remaining acreage goes to a current or intermediate emphasis. For the current emphasis there is limited habitat improvement, an emphasis on threatened and endangered species habitat maintenance and recovery of species within the existing recovery plan, specific habitat coordination with other resource activities for threatened and endangered or sensitive wildlife species; etc. The intermediate management emphasis of wildlife habitat is somewhat above current. The primary habitat improvement is directed toward big game and game fish species. See the Prescription section of Appendix B for more specific details regarding management emphasis. Herbaceous forage and cover habitat is expected to be reduced 17 percent by the fifth period. Coniferous habitats will be reduced approximately 22 percent. Overall, wildlife habitat diversity and carrying capacity is expected to sustain a moderate decline. Wildlife recreation visitor days for the first decade are 284,000 and decrease to 137,000 by the fifth decade.

Range

The objective of this alternative is to emphasize the domestic livestock grazing by providing for a third decade permitted grazing level above the level currently permitted. This alternative provides additional range developments. Increased management intensity will occur on some of the grazing allotments. Permitted use is 355,000 animal unit months in the first decade and increases to 400,000 animal unit months by the third decade. Permitted use and capacity will be balanced by the end of the second decade at 372,000 animal unit months and remain in balance.

Timber

Once the range objective is met, the objective of the alternative is to maximize timber. Timber is managed on a relatively intensive level with consideration for multiple use and other resource values. The result is an average annual sawtimber volume in the first decade of 43 MMBF, which is approximately a 32 percent increase over the Current Alternative. This volume declines slightly but remains at approximately 40 MMBF throughout the first 50 years of the planning horizon. The average annual first decade volume consists of 13 MMBF mixed conifer and 29 MMBF ponderosa pine. No cable logging is scheduled in the first decade. Total fuelwood scheduled to be taken in the first decade is 9 MMBF and increases to 11 MMBF by the fifth decade.

Socioeconomic

The Commodity Emphasis (range) Alternative incorporates budget constraints in the first decade. Annual expenditures in the first decade are approximately \$7.9 million, while annual expenditures in the second decade are \$9.1 million. Annual receipts are \$4.9 million in the first decade. Over the 200-year planning horizon, discounted costs are \$285 million and benefits are \$432 million. The distribution of discounted costs is:

Administration/Other	\$ 48.4 million
Timber Management	\$ 69.4 million
Recreation/Wildlife	\$ 12.1 million
Range Management	\$ 26.4 million
Protection	\$102.9 million
Roads/FA & O	\$ 26.0 million

The distribution of discounted benefits is:

Recreation/Wildlife	\$255.5 million
Sawtimber/Products/Fuelwood	\$102.6 million
Range	\$ 73.8 million

Forest related jobs could increase over the 1977 base year level by 80 -- a 4.8 percent increase.

Alternative D
Commodity Emphasis
(Timber)

Alternative D emphasized market opportunities, particularly timber outputs. It was developed to maximize PNW with an emphasis on outputs having market values (primarily timber and domestic livestock grazing). Management of other resources are at economically and environmentally feasible levels consistent with the emphasis on market oriented outputs. Objectives specific to this alternative are:

To determine the net effect on sawtimber harvests as a result of a reduction in permitted livestock use.

To provide public benefits that emphasize priced benefits and quantifiable outputs.

Wilderness Study
Areas

Neither of the two existing wilderness study areas are proposed for inclusion to the Wilderness System under the Commodity Emphasis (Timber) Alternative.

Wild & Scenic
Rivers

Two river systems have been named by the National Park Service as qualified for classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers. Neither of the rivers are proposed for inclusion in the Wild and Scenic Rivers Program under the Commodity Emphasis (Timber) Alternative.

Recreation

Developed use will continue to increase for the first decade. The second decade will remain stable at zero growth as older facilities begin to deteriorate due to assumed funding limitations. In the third through the fifth periods, a shifting of maintenance funds will result in the closing of certain lower priority sites enabling more effective management of the more popular sites. Developed recreation visitor days increase from 171,000 in the first decade to 191,000 in the second. Use is expected to drop to 172,000 in the third, and continue to decline to 139,000 recreation visitor days by the fifth decade.

Maintenance levels will be satisfactory for most wilderness and dispersed recreation facilities. Dispersed recreation visitor days are expected to increase from 448,000 in the first decade to 966,000 by the fifth decade. Wilderness recreation visitor days are anticipated to increase from 87,000 to 117,000 by the fifth decade. Of the 699,000 unroaded acres on the Forest, 678,200 acres would remain unroaded and available for semi-primitive recreation through the first decade.

Wildlife & Fish

The prescription emphasis is very similar to Alternative C. Herbaceous forage and cover habitats are expected to be reduced 11 percent by the fifth decade. Coniferous habitats would be reduced approximately 29 percent. This would result in a moderate decline in wildlife habitat diversity and carrying capacity over time. Wildlife recreation visitor days for the first decade are 307,000 and are expected to decrease to 148,000 by the fifth decade.

Range

Range permitted use was reduced in this alternative to allow for additional sawtimber. Permitted use is 340,000 animal unit months in the first decade, equal to capacity at 334,000 animal unit months by the end of the second period, and equal to the constrained level of 340,000 animal unit months by the fifth decade.

Timber

The main objective of this alternative is to determine the levels of sawtimber that could be produced by the Forest in the first period and still satisfy the requirements of an acceptable commodity emphasis alternative. Timber is being managed at an intensive level. Sawtimber in the first decade is 53 MMBF and declines slightly in the second decade, however, the volume remains between 46 and 50 MMBF throughout the first 50 years of the planning horizon. The first decade volume is 71 percent above the Current Alternative volume of 31 MMBF. Mixed conifer accounts for 25 MMBF while 28 MMBF of ponderosa pine will be harvested annually. About seven MMBF of the volume will be harvested from steep slopes using the cable logging method. Fuelwood volume taken in the first decade will be approximately ten MMBF. This volume will increase slightly to 11 MMBF by the fifth decade.

Socioeconomic

The Commodity Emphasis (timber) Alternative incorporates budget constraints throughout the planning horizon. Annual expenditures in the first decade are approximately \$7.9 million, while annual expenditures in the second decade are \$9.2 million. Annual receipts are \$5.7 million in the first decade. Over the 200-year planning horizon, discounted costs are \$290 million and benefits are \$456 million. The distribution of discounted costs is:

Administration/Other	\$48.4 million
Timber Management	\$94.5 million
Recreation/Wildlife	\$12.1 million
Range Management	\$20.5 million
Protection	\$88.2 million
Roads/FA & O	\$26.7 million

The distribution of discounted benefits is:

Recreation/Wildlife	\$262.7 million
Sawtimber/Products/Fuelwood	\$123.1 million
Range	\$ 70.2 million

There is the potential for an increase of 194 Forest related jobs--11.7 percent over the 1977 base year level.

Alternative E Range/Wildlife Conflict Resolution

Alternative E is designed to improve the utilization of range resources and improve range capacity. Demand for grazing use currently exceeds capacity, however, opportunities are available to increase production capability and reduce conflicts with other resources. The primary conflict is between range and wildlife. The objective of the alternative was to provide a relatively high level of permitted grazing use by the fifth decade and maintain wildlife habitats at a relatively high level. Timber would be at a level that could be accomplished with the remaining budget.

Wilderness Study Areas

The Hells Hole and the Lower San Francisco River wilderness study areas are recommended for Wilderness designation.

Wild & Scenic Rivers

Two river systems have been named by the National Park Service as qualified for Classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers. Neither of the rivers are proposed for inclusion in the Wild and Scenic Rivers Program under the Range/Wildlife Conflict Resolution Alternative.

Recreation

Funding levels will be adequate to insure a moderate to high quality experience in all areas. Developed recreation is projected to be 171,000 recreation visitor days in the first decade and will increase to 191,000 by the fifth decade. Total dispersed recreation visitor days for the first decade equal 448,000 and increase to 977,000 by the fifth decade. Wilderness recreation visitor days are equal to 87,000 in the first decade and increase to 117,000 by the fifth decade. It was determined that recreation funding would need to keep pace with the expected rate of increase in use in an effort to meet the overall objective of the alternative. Of the 699,000 unroaded acres on the Forest, 689,400 acres would remain unroaded and available for semi-primitive recreation through the first decade.

Wildlife & Fish

The primary objective of this alternative is to resolve the range/wildlife conflict issue--to provide a relatively high level of permitted livestock grazing by the fifth decade and to have wildlife habitats maintained at a relatively high level. Specific levels of wildlife herbaceous habitat and coniferous forest habitats were identified and constrained as necessary to meet the primary objective. The constrained levels of herbaceous and coniferous forest habitat were set at a level that was considered necessary to meet the objective of the alternative and still allow for the desired level of permitted grazing. Herbaceous forage and cover habitat is expected to increase 56 percent by the end of the fifth decade. Coniferous habitat may decrease by 10 percent, however, the distribution is expected to improve. The level of wildlife emphasis will result in a significant increase in wildlife habitat diversity and carrying capacity. Wildlife and fish related recreation visitor days are projected to be 328,000 in the first decade and increase to 403,000 by the fifth decade.

Range

In order to provide a relatively high level of permitted livestock grazing, the alternative was constrained to achieve a level of 380,000 animal unit months by the fifth decade. A specified level of structural range improvements was included to prevent delaying the implementation of the maximum range prescriptions until the second decade. Permitted use is projected to be 350,000 animal unit months in the first decade, is even with capacity at 361,000 animal unit months by the end of the second decade, and equals 380,000 animal unit months by the fifth decade.

Timber

Timber was maximized within the levels set on wildlife and range. With the emphasis being placed on range and wildlife, it became necessary to constrain a specific amount of sawtimber to insure that the alternative could be implemented. The result is a sawtimber volume of 28 MMBF in the first decade, with volumes in the second through the fifth decade from 25 to 27 MMBF per year. The first decade average annual volume represents a 9 percent decrease from the Current Alternative level. This volume includes 15 MMBF of mixed conifer and 13 MMBF of ponderosa pine. About two MMBF will be harvested using cable logging systems. Total fuelwood in the first decade will be approximately seven MMBF and is expected to increase to ten MMBF by the fifth decade.

Socioeconomic

The Range/Wildlife Conflict Resolution Alternative incorporates budget constraints throughout the planning horizon. Annual expenditures in the first decade are approximately \$7.7 million, while annual expenditures in the second decade are \$8.3 million. Annual receipts are \$3.3 million in the first decade. Over the 200 year planning horizon, discounted costs are \$256 million and benefits are \$499 million. The distribution of discounted costs is:

Administration/Other	\$45.4 million
Timber Management	\$46.3 million
Recreation/Wildlife	\$24.1 million
Range Management	\$27.6 million
Protection	\$85.5 million
Roads/FA & O	\$26.7 million

The distribution of discounted benefits is:

Recreation/Wildlife	\$357.0 million
Sawtimber/Products/Fuelwood	\$ 67.2 million
Range	\$ 75.1 million

There is little change in available jobs when compared to the 1977 base year level.

Alternative F NonCommodity Emphasis

This alternative emphasizes resource outputs with nonmarket values. It was developed with an emphasis on amenity values (ie. wildlife, dispersed and developed recreation, quality of wilderness experience, watershed condition, and other amenity values). Management for other resources was at economically and environmentally feasible levels consistent with the emphasis on amenity values.

Wilderness Study Areas

The Hells Hole and San Francisco River Wilderness Study Areas are recommended for inclusion in the National Wilderness System in this alternative.

Wild & Scenic Rivers

Both the San Francisco River and the Gila River are recommended for inclusion the Wild and Scenic Rivers Program. The San Francisco River includes the entire system within New Mexico which includes approximately 91 miles on National Forest System lands. All eligible segments of the San Francisco River are recommended for classification under this alternative. This would place 27 miles of river in the "Wild" and 12 miles in the "Scenic" category.

The Gila River was broken into three segments. Eight miles of the Gila River are recommended to the "Wild" category and five miles are recommended to the "Scenic" category under this alternative. Portions inside the wilderness are already protected and are not recommended for classification.

Recreation

A moderate to high quality recreation experience will be provided in all areas. Developed recreation use is projected to be 171,000 recreation visitor days in the first decade and will increase to 191,000 by the fifth decade. Total dispersed recreation visitor days for the first decade equal 446,000 and are expected to increase to 866,000 by the fifth decade. There will be 89,000 wilderness recreation visitor days of use in the first decade. This use is expected to increase to 120,000 recreation visitor days by the fifth decade. In order to meet the objectives of the nonmarket alternative, recreation funding is projected to increase with the expected rate of increase in recreation use. Of the 699,000 unroaded acres on the Forest, 690,500 acres would remain unroaded and available for semi-primitive recreation through the first decade.

Wildlife

Wildlife recreation is not considered to be a commodity output. Since the objective of this alternative is to maximize nonmarket or noncommodity outputs, the emphasis on wildlife is high. As a result, range livestock outputs decline over time. Herbaceous forage and cover habitat is expected to increase 138 percent by the end of the fifth period. Coniferous habitats will decline about ten percent, however, distribution will improve. Wildlife recreation is at a level of 422,000 recreation visitor days for the first decade and continues to increase to a level of 691,000 recreation visitor days by the fifth decade. Wildlife outputs increase throughout the planning horizon.

Range

Range improvements will decline because only range betterment funds are expected to be the only funds available for construction and reconstruction. Opportunities to improve management will be diminished. The overall result will be a reduction in permitted livestock Forest wide. Permitted livestock use would drop from 383,000 animal unit months to 314,000 animal unit months in the first decade. Because of the deterioration of existing improvements caused by lack of reconstruction funds, permitted use would continue to drop to a fifth decade level of 250,000 animal unit months. Permitted use and capacity will be balanced by the end of the first decade at 314,000 animal unit months.

Timber

Within the limits set by the objective to emphasize noncommodity outputs, timber volume is determined by the remaining available funds. The result is 14 MMBF scheduled for harvest in the first decade, with an increase to 26 MMBF in the second. The volume for the third through the fifth decades results at an average annual volume of approximately 25 MMBF. The first decade volume represents a 56 percent decrease from the current level volume. Mixed conifer accounts for ten MMBF while ponderosa pine makes up the remaining three MMBF of the average annual volume for the first decade. No cable logging is scheduled for the first decade. Fuelwood scheduled for harvest in the first decade is six MMBF and increases to eight by the fifth decade.

Socioeconomic

The Noncommodity Emphasis Alternative incorporates budget constraints throughout the planning horizon. Annual expenditures in the first decade are approximately \$7.7 million, while annual expenditures in the second decade are \$8.8 million.

Annual receipts are \$1.8 million in the first decade. Over the 200-year planning horizon, discounted costs are \$263 million and benefits are \$604 million. The distribution of discounted costs is:

Administration/Other	\$46.5 million
Timber Management	\$42.8 million
Recreation/Wildlife	\$54.0 million
Range Management	\$14.6 million
Protection	\$86.1 million
Roads/FA & O	\$18.7 million

The distribution of discounted benefits is:

Recreation/Wildlife	\$484.0 million
Sawtimber/Products/Fuelwood	\$ 55.3 million
Range	\$ 64.8 million

This alternative would be expected to result in about 34 less jobs than available in the 1977 base year level.

COMPARISON OF ALTERNATIVES

Issues, Concern, and Opportunities

The following tables are provided to facilitate comparison of the alternatives.

Table 2 shows in quantitative and qualitative terms how each alternative addresses the issues, concerns, and opportunities (ICO).

There are quantity and/or quality aspects of each ICO. Those quantities affecting the ICOs are listed to provide the reader with an understanding of the short-term and/or long-term effects.

The quality aspects are dealt with in a short text. Some of these evaluations are subjective and are based on the professional expertise and experience of the interdisciplinary team. Each ICO is addressed separately in the table. Since the issues and concerns resulted from current management, the current direction alternative is addressed first. Where applicable, other alternatives are compared to current.

TABLE 2 Issue Resolution

Issue: (1) Produce Timber and Wood Fiber (Commercial Portion)

[Ave. annual for first period and fifth period; Fifth in ()]

	ALTERNATIVES						
	PA	A	B	C	D	E	F
Sawtimber (MMBF)	30.0 (30.0)	31.0 (46.2)	36.8 (37.7)	42.6 (41.2)	53.1 (47.8)	28.1 (25.0)	13.8 (24.8)
Volume Cable(MMBF)	5.0 (15.4)	8.9 (12.3)	6.8 (18.7)	0.0 (20.1)	7.4 (26.9)	5.2 (5.5)	0.0 (0.2)
Allowable Sale Quantity (MCF)	8,326 (8,326)	8,289 (11,444)	9,807 (11,128)	11,128 (11,160)	13,552 (13,552)	7,187 (7,187)	3,487 (7,270)
Av. Annual Ac. Logged 1st Period	8,076	9,051	7,659	7,555	8,261	4,119	1,743
Total Acres Logged By End Of Fifth Period	272,174	335,203	360,368	351,697	412,163	277,894	303,306
Sawtimber Projected Use Trend	First Period: 30MMBF			Fifth Period: 30MMBF			

The commercial timber related portion of Issue 1 concerns the amount of volume supplied, the location of timber activities and the potential conflicts with other resources. The amount supplied portion of the concern is related to community stability and stability of the timber industry. The timber activity location portion of the concern is related to development of presently unroaded portions of the Forest and to logging of steep slope areas. The potential resource conflicts are with visual quality, dispersed recreation opportunities, and wildlife. Wildlife conflicts are addressed with Issue 5. Dispersed recreation conflicts are addressed with Issue 4.

Alternative A (Current): This alternative provides a first decade volume slightly above the average volume sold on the Forest over the past 10 to 15 years. As a result, volume should be available to provide for community stability and the stability of the local timber industry. Since a long term increase in timber supply is provided, the timber industry and timber dependent communities could expand in the future. In order to meet the alternative objectives, 24 percent of the first decade volume and 59 percent of the fifth decade volume would come from steep slope areas. A large percentage of the increase in volume from the first to the fifth decade is because of steep slope logging. There are presently approximately 699,000 unroaded acres on the Forest. Implementation of this alternative would result in development of 49,532 unroaded acres in the first decade and 110,914 unroaded acres by the end of the fifth decade. The first decade allowable sale quantity for this alternative would be 38 percent below the existing allowable sale quantity. By the fifth decade it is 16 percent below.

The resource conflicts between visual quality and timber management are addressed by continuing the existing visual quality considerations. Seen areas along major travelways are maintained in partial retention. This results in a slight reduction in timber outputs from these areas. Because of the relatively small acreage involved, the potential reduction in timber outputs is small. As timber is harvested over time, the area in the retention visual quality class will be reduced.

TABLE 2 Issue Resolution (Continued)

Since this alternative logs the forth largest number of acres within the first 50 years, it will have the forth largest reduction in retention acres. Because of the intensity of management in the Current Alternative, however, most areas harvested will remain more natural-appearing than in the other alternatives, all of which prescribe harvests that remove more volume per acre.

Alternative PA: This alternative provides a first decade volume equal to the average volume sold on the Forest over the past 10 to 15 years. As a result, volume would be available to provide for timber dependent community stability and the stability of the local timber industry. Volume is projected to remain at the 30 MMBF level over time. This should provide for the long term stability of the local timber industry and timber dependent communities. In order to meet the alternative objectives, 17 percent of the first decade volume and 50 percent of the fifth decade volume would come from steep slope areas. The combination of steep slope and 0-40 percent logging helps minimize the long term development of presently undeveloped areas. There are presently approximately 699,000 unroaded acres on the Forest. Implementation of this alternative would result in development of 20,611 unroaded acres in the first decade and 70,469 unroaded acres by the end of the the fifth decade. The allowable sale quantity for this alternative would be 62 percent below the existing allowable sale quantity in all decades.

The resource conflicts between visual quality and timber management are addressed by continuing the current management direction. Seen areas along major travelways are managed to maintain a classification of partial retention or above. This results in a slight reduction in timber outputs from these areas. Because of the relatively small acreage involved, the potential reduction in timber outputs is small. Since this alternative logs the smallest number of acres within the first fifty years, implementation will result in only a small reduction of retention acres. Because of the considerations for wildlife and stand diversity, most areas harvested will remain more natural appearing than in alternatives that prescribe harvests that remove more volume per acre.

Alternative B (RPA): This alternative provides a first decade volume approximately 23 percent above the average volume sold on the Forest over the past 10 to 15 years. As a result, volume should be available to provide for timber dependent community and local timber industry expansion. This expanded level of available supply is sustained into the future. In order to meet the alternative objectives, 18 percent of the first decade volume and 51 percent of the fifth decade volume would come from steep slope areas. A large percentage of the increase in volume is because of steep slope logging. Implementation of this alternative would result in development of 24,265 unroaded acres in the first decade and 132,127 unroaded acres by the end of the the fifth decade. The first decade allowable sale quantity for this alternative is 27 percent percent below the existing allowable sale quantity. By the fifth decade it is 18 percent below.

The resource conflicts between visual quality and timber management are addressed by continuing the existing visual quality considerations along major travelways. The area in the retention visual quality class will be reduced. Since this alternative logs the second largest number of acres within the first fifty years, it will have the second largest reduction in retention acres. Because of the intensity of management and the high volume per acre removed, areas logged will tend toward the maximum modification end of the visual quality level classes.

Alternative C: This alternative provides a first decade volume 42 percent above the average volume sold on the Forest over the past 10 to 15 years. As a result, volume would be available to provide for timber dependent community expansion and significant expansion of the local timber industry. This expanded level of available supply is sustained into the future. In order to meet the alternative objectives, none of the first decade volume and 49 percent of the fifth decade volume would come from steep slope areas. Volumes in Periods 2 through 5 are maintained at a relatively constant level because of the volumes provided by logging steep slope (cable) areas. Implementation of this alternative would result in development of 15,380 unroaded acres in the first decade and 112,468 unroaded acres by the end of the the fifth decade. The allowable sale quantity for this alternative would be 17 percent below the existing allowable sale quantity in all decades.

The resource conflicts between visual quality and timber management are largely resolved in favor of timber in this alternative. The area in the retention visual quality class will again be reduced. Since this alternative logs the third largest number of acres within the first fifty years, it will have the third largest reduction in retention acres. Because of the intensity of management and the high volume per acre removed, acres logged will tend toward the maximum modification end of the visual quality level classes. This alternative would have more area in maximum modification than Alternative B.

TABLE 2 Issue Resolution (continued)

Alternative D: This alternative provides a first decade volume 77 percent above the average volume sold on the Forest over the past 10 to 15 years. As a result, volume would be available to provide for timber dependent community expansion and significant expansion of the local timber industry. This level of available supply remains high into the future. In order to meet the alternative objectives, 14 percent of the first decade volume and 56 percent of the fifth decade volume would come from steep slope areas. The high level of volume supplied is only possible by logging steep slope areas. Implementation of this alternative would result in development of 20,702 unroaded acres in the first decade and 176,707 unroaded acres by the end of the the fifth decade. The allowable sale quantity for this alternative is approximately equal to the existing allowable sale quantity in all decades.

The resource conflicts between visual quality and timber management are again resolved largely in favor of timber. Since this alternative logs the largest number of acres within the first fifty years, it will have the largest reduction in retention acres. Acres logged will tend toward the maximum modification class. This alternative will have the greatest area in the maximum modification category.

Alternative E: This alternative provides a first decade volume six percent below the average volume sold on the Forest over the past 10 to 15 years. As a result, a small reduction in timber dependent community stability and a reduction in the local timber industry would be expected. Sawtimber supplies would continue to decrease to a fifth decade level 17 percent below average volume sold levels. In order to meet the alternative objectives, 19 percent of the first decade volume and 22 percent of the fifth decade volume would come from steep slope areas. Implementation of this alternative would result in development of 9,610 unroaded acres in the first decade and 70,671 unroaded acres by the end of the the fifth decade. The allowable sale quantity for this alternative is 47 percent below the existing allowable sale quantity in all decades.

The resource conflicts between visual quality and timber management are addressed by continuing the existing visual quality considerations. Seen areas along major travelways are maintained in partial retention. Because of the limited number of unroaded acres logged in this alternative, little change is anticipated in the retention visual quality class acreage. Timber harvest in some partial retention areas will result in those acres changing to modification.

Alternative F: This alternative provides a first decade volume 54 percent below the average volume sold on the Forest over the past 10 to 15 years. As a result timber jobs in timber dependent communities would be reduced and the local timber industry would be adversely impacted. Available sawtimber volume would increase by the fifth decade to 17 percent below the average volume level. Very little volume is logged from steep slope areas. Implementation of this alternative would result in development of 8,480 unroaded acres in the first decade and 117,589 unroaded acres by the end of the the fifth decade. The first decade allowable sale quantity for this alternative is 74 percent below the existing allowable sale quantity. By the fifth decade it is 46 percent below the existing allowable sale quantity.

The resource conflicts between visual quality and timber management are generally resolved in favor of visual quality. Acres of the modification and maximum modification visual classes will stay at approximately existing levels. An insignificant addition may occur because of wildlife clearcuts. Since most roads will be closed after timber harvest, some existing partial retention areas will qualify as part of the retention visual quality class.

Issue: (1) Produce Timber and Wood Fiber (Fuelwood Portion)

[Ave. annual for first period and fifth period; Fifth in ()]

	ALTERNATIVES						
	PA	A	B	C	D	E	F
Pinyon-Juniper	9.8	5.7	8.0	7.0	7.0	5.4	5.4
Fuelwood [MMBF]	(11.4)	(5.3)	(10.5)	(7.4)	(6.7)	(8.2)	(5.9)
Timber Harvest	2.0	2.0	2.4	2.2	2.8	1.7	0.8
Fuelwood [MMBF]	(3.4)	(5.3)	(4.4)	(3.2)	(4.0)	(2.0)	(2.6)
Total Fuelwood [MMBF]	11.9	7.7	10.4	9.2	9.8	6.9	6.2
	(16.5)	(10.6)	(14.9)	(10.6)	(10.7)	(10.2)	(8.5)

Fuelwood Projected Use Trend

First Period: 22MMBF

Fifth Period: 60MMBF

The fuelwood portion of Issue 1 is related to the demand for fuelwood. Assuming that the price of fuelwood stays competitive with other fuels, the demand for fuelwood cannot be met under any alternative or benchmark. Potential resource conflicts with wildlife are addressed with Issues 5.

TABLE 2 Issue Resolution (continued)

Alternative A: This alternative provides 35 percent of the first decade demanded level and 18 percent of the fifth decade level. The alternative ranks fifth in the resolution of the issue in the first and fifth decade.

Alternative PA: This alternative provides 54 percent of the first decade demanded level and 28 percent of the fifth decade level. It comes the closest of all alternatives to resolving the fuelwood issue.

Alternative B: This alternative provides 47 percent of the first decade demanded level and 25 percent of the fifth decade level. It ranks second in resolving the issue in the first and fifth decades.

Alternative C: This alternative provides 42 percent of the first decade demanded level and 18 percent of the fifth decade level. It ranks forth in resolving the issue in the first and fifth decades.

Alternative D: This alternative provides 45 percent of the first decade demand level and 18 percent of the fifth decade level. It ranks third best in resolving the issue in the first and fifth decades.

Alternative E: This alternative provides 31 percent of the first decade demanded level and 17 percent of the fifth decade level. It ranks sixth in resolving the issue in the first and fifth decades.

Alternative F: This alternative provides 26 percent of the first decade demanded level and 14 percent of the fifth decade level. It is the least effective in resolving the issue in the first and fifth decades.

Issue: [2] Manage and Utilize Range Resources and Improve Range Grazing

[Ave. annual for first period and fifth period; Fifth in []]

The Average annual permitted livestock numbers in 1980 {plan base year} was 383,000 animal unit months.

	ALTERNATIVES						
	PA	A	B	C	D	E	F
Permitted MAUMs	347.3 (350.0)	338.3 (289.4)	349.0 (354.0)	355.2 (400.0)	339.7 (340.0)	350.3 (380.0)	314.2 (284.5)
Capacity MAUMs	330.0 (350.0)	314.4 (289.4)	330.9 (354.0)	342.2 (400.0)	317.6 (340.0)	330.6 (380.0)	314.2 (284.5)

Grazing Projected Use Trend

First Period: 383 MAUMs

Fifth Period: 434 MAUMs

The domestic livestock grazing issue concerns the demand for grazing and the reduction in conflicts with other resources. Since all first decade outputs are similar, a comparison of resolution at the fifth decade is more meaningful. The conflicts with other resources are with wildlife and soil loss. All alternatives, except Alternative A (Current Direction) and Alternative F (Noncommodity Emphasis), balance permitted numbers with forage capacity by the second decade. Alternative A balances use and capacity in decade three. Alternative F balances use and capacity in decade one. This results in a soil loss reduction over time for all alternatives. A more complete description of the effects on the conflicts with wildlife is addressed in Issue 5.

Alternative A: This alternative provides capacity equal to 65 percent of the fifth decade demanded level. It ranks sixth in the resolution of this portion of the issue. Capacity declines over time because of projected deterioration of existing improvements. There are few new investments in this alternative. Use and capacity are balanced in Period 3 at 299,000 animal unit months.

Alternative PA: This alternative provides capacity equal to 79 percent of the fifth decade demanded level. It ranks fourth in the resolution of this portion of the issue. Approximately 65 percent of the Forest will be managed to maintain existing improvements and provide for construction of new improvements on the highest potential areas. Management on the remainder of the Forest will result in declining capacity over time as unmaintained improvements deteriorate. Use and capacity are balanced in Period 2 at 346,000 animal unit months.

Alternative B: This alternative provides capacity equal to 79 percent of the fifth decade demanded level. It ranks third in the resolution of this portion of the issue. Approximately 85 percent of the Forest (excluding low producing timber areas) will be managed to maintain existing improvements and provide for the construction of some new improvements. Because of wildlife considerations, these are not always the highest potential areas. Management on the remainder of the Forest results in declining capacity over time as unmaintained improvements deteriorate. Use and capacity are balanced in Period 2 at 345,000 animal unit months.

TABLE 2 Issue Resolution (continued)

Alternative C: This alternative provides capacity equal to 92 percent of the fifth decade demanded level. It is the best alternatives in the resolution of this portion of the issue. Approximately 34 percent of the Forest will be managed to maximize production of domestic livestock. Approximately 15 percent will be managed to maintain existing improvements and provide for the construction of new improvements on better portions of this area. Management on the remainder of the Forest results in declining capacity over time as unmaintained improvements deteriorate. Use and capacity are balanced in period 2 at 372,000 animal unit months.

Alternative D: This alternative provides capacity equal to 76 percent of the fifth decade demanded level. It ranks fifth in the resolution of this portion of the issue. Approximately 25 percent of the Forest will be managed to maintain existing improvements and provide for the construction of new improvements on better portions of this area. Management on the remainder of the forest will result in capacity declines over time as unmaintained improvements deteriorate. Use and capacity are balanced in Period 2 at 334,000 animal unit months.

Alternative E: This alternative provides capacity equal to 85 percent of the fifth decade demanded level. It is one of the best alternatives in the resolution of this portion of the issue. Approximately 13 percent of the Forest will be managed to maximize production of domestic livestock. Approximately 43 percent of the Forest will be managed to maintain existing improvements and provide for the construction of new improvements on better portions of this area. Management on the remainder of the Forest results in capacity declines over time as unmaintained improvements deteriorate. Use and capacity are balanced in Period 2 at 352,000 animal unit months.

Alternative F: This alternative provides capacity equal to 64 percent of the fifth decade demanded level. It is the least effective alternative in resolving this portion of the issue. Only a small portion of the Forest will be managed so that all existing improvements will be maintained. Management on the remainder of the Forest results in declining capacity over time as unmaintained improvements deteriorate. Use and capacity are balanced in Period 1 at 314,000 animal unit months. This would have an adverse impact on the local livestock industry and on local communities.

Issue: [3] Adjust Landownership as Needed to Support Resource Management Goals (Community Expansion)

Expansion of communities surrounded by National Forest Land is treated equally in all alternatives. Proposed base in Exchange lands total 9580 acres and provide for expansion of communities as the need arises.

Issue: [3] Adjust Landownership as Needed to Support Resource Management Goals (Rights of Ways)

All alternatives provide for acquisition of rights-of-way to support resource management goals. All alternatives provide for the acquisition of approximately 19 miles of rights-of-way per period. The purpose of acquisition varies by alternative.

Alternative A, B, C, D, and PA: In these alternatives the present priority on the acquisition of rights-of-way will continue. The first priority is the acquisition of rights-of-way needed for timber harvest operations. After these needs are satisfied, recreation and range related rights-of-way will be acquired. Over time, the number of new rights-of-way needed to support the timber program will decline. By the second decade, the need for new timber rights-of-ways should be low enough that significant accomplishment of the acquisition of needed recreation rights-of-way should begin.

Alternative E and F: In these alternatives, the first priority is the acquisition of recreation and wildlife related rights-of-way. With the reduced timber program the rights-of-way need for timber related activities should be low enough that significant accomplishment of the acquisition of needed recreation rights-of-way should begin in the first decade.

Issue: [4] Provide Various Recreation Options

The recreation issue concerns the need for various types of recreation opportunities on the Forest. Approximately 90 percent of the demanded level of dispersed recreation is satisfied by all alternatives, but the mix of opportunities available varies by alternative. Presently 60 percent of the Forest is classified as providing some form of motorized recreation experience [gathering forest products, sightseeing, and other dispersed recreation activities conducted close to roads]. This percentage increases on most alternatives. No developed recreation issue was identified.

TABLE 2 Issue Resolution [continued]

Alternative A: Timber activity in this alternative results in the forth largest roaded area by the end of the fifth decade. Most existing travelways will remain open. As a result of these factors, this alternative has the fifth highest rate of conversion of nonroaded recreation opportunity areas to roaded opportunities. Opportunities such as driving for pleasure, sightseeing, and other dispersed recreation activities conducted close to roads would increase. Opportunities, outside of wilderness, for activities commonly conducted in a more unmodified environment [backpacking, horseback riding, etc.] will decrease. Access for hunting and fishing will be increased. Off road vehicle opportunities would increase as access into the Forest increases. Some dispersed recreation facilities will not be maintained over time [including trails]. As a result some existing facilities will be abandoned.

Alternative PA: Timber activities in this alternative will result in the smallest roaded area by the end of the fifth decade. Existing travelways not closed through timber activities will be closed at a rate of 800 miles the first decade, 280 miles the second decade, and 280 miles the third decade. Where conflicts with wildlife exist or where new roads are not needed for protection or administration of the timber resource, local roads constructed for timber harvest will be closed. This should result in closure of approximately 65 percent of new constructed roads. As a result of travelway and road closures, open road density will decline by the end of the first decade. A high level of non-motorized recreation opportunities will be maintained. Opportunities like driving for pleasure, sightseeing, and other dispersed recreation activities conducted close to roads will remain at approximately existing levels. Opportunities outside of wilderness for activities commonly conducted in a more unmodified environment [backpacking, horseback riding, etc.] will remain high. Access for hunting and fishing will be maintained at approximately existing levels. Even though most of the Forest remains open to off road vehicle use, road closures will result in a decrease in motorized opportunities to access relatively unmodified environments. Most existing dispersed recreation facilities will be maintained over time.

Alternative B: Timber activities in this alternative result in the second largest roaded area by the end of the fifth decade. Existing nonessential travelways will be closed at a rate of 450 miles the first two decades and 500 the third decade. Where local roads, constructed for timber sales, conflict with wildlife they will be closed. As a result of these factors, this alternative has the third highest rate of conversion of nonroaded recreation opportunity areas to roaded opportunities. The types of recreation effected are explained in the Alternative A. Access for hunting and fishing will be increased. Off road vehicle opportunities will increase as the access into the Forest increases. Opportunities to access relatively unmodified environments with four-wheel drive vehicles will decrease as more areas are modified through timber sales and fuelwood harvest and as existing travelways are closed. Since travelways will be closed sooner in this alternative than in Alternative PA, the opportunities will be lost sooner. Most existing recreation facilities will be maintained over time.

Alternative C: Timber activities in this alternative will result in the third largest roaded area by the end of the fifth decade. Existing nonessential travelways will be closed at a rate of 100 miles the first decade and 630 miles each in decades two and three. Most of the local roads constructed for timber sales will remain open. As a result of these factors, this alternative has the second highest rate of conversion of nonroaded recreation opportunity areas to roaded opportunities. The types of recreation effected are explained in the PA alternative. Access for hunting and fishing will be increased. Since most roads will remain open, some opportunity will be lost to hunt in unroaded areas [outside wilderness]. Off road vehicle opportunities will increase. Opportunities to access relatively unmodified environments with four-wheel drive vehicles will decrease but the opportunities to travel into timber sale areas on unclosed local roads will increase. Some dispersed recreation facilities will not be maintained over time [including trails]. As a result some existing facilities will be abandoned.

Alternative D: Timber activities in this alternative result in the largest roaded area by the end of the fifth decade. Existing nonessential travelways will be closed at a rate of 100 miles the first decade and 630 miles each in decades two and three. Most of the local roads constructed for timber sales will remain open. As a result of these factors, this alternative has the highest rate of conversion of nonroaded recreation opportunity areas to roaded opportunities. Opportunities like driving for pleasure, sightseeing, and other dispersed recreation activities conducted close to roads will increase. Opportunities outside of wilderness for activities commonly conducted in a more unmodified environment [backpacking, horseback riding, etc.] will decrease. Access for hunting and fishing will be increased. Off road vehicle opportunities will increase. Opportunities to access relatively unmodified environments with four-wheel drive vehicles will decrease, but the opportunities to travel into timber sale areas on unclosed local roads will increase. Some dispersed recreation facilities will not be maintained over time [including trails]. As a result some existing facilities will be abandoned.

Alternative E: Timber activities in this alternative result in the second lowest roaded area by the end of the fifth decade. Existing nonessential travelways will be closed at a rate of 600 miles the first and second decades and 160 miles the third decade. Considering the wildlife emphasis in the alternative,

TABLE 2 Issue Resolution (continued)

many of the local roads constructed for timber harvest will be closed after the harvest is complete. As a result of these factors, this alternative converts very few acres from nonroaded recreation opportunities to roaded opportunities. Opportunities, outside of wilderness, for activities commonly conducted in a more unmodified environment (backpacking, horseback riding, etc) will remain relatively high. Opportunities such as driving for pleasure, sightseeing, and other dispersed recreation activities conducted close to roads will increase only slightly. Access for hunting and fishing will be reduced slightly as travelways are closed, but local road closures will be planned so that access will be well distributed. Off road vehicle opportunities will decrease and the opportunity to access relatively unmodified environments with four-wheel drive vehicles will decrease. All existing dispersed recreation facilities will be maintained and priority new improvements will be constructed.

Alternative F: Timber activities in this alternative result in the third to the lowest roaded area by the end of the fifth decade. Existing nonessential travelways will be closed at a rate of 800 miles the first decade and 280 miles in the second and third decades. Because much of the timber harvest will be to improve wildlife habitat and in order to provide for high watershed considerations, most of the local roads constructed in conjunction with timber harvest will be closed. As a result of these factors, this alternative tends to provide slightly higher levels of nonroaded recreation opportunities over time. The type of effects on recreation activities, off road vehicle opportunities, and hunting and fishing access will be similar to that explained for Alternative E. All existing dispersed recreation facilities will be maintained and priority new improvements will be constructed.

Issue: [5] Maintain or Improve Fish and Wildlife Habitats

The overall effect of each alternative on wildlife habitat carrying capacity is affected by quantity of habitat components and the quality of habitats associated with levels of coordination and improvement.

Percent of Change In Existing Habitats Expected by End of Fifth Period

Habitat Component	PA	Alternative					
		A	B	C	D	E	F
Old Growth (Acres)	-12%	-12%	-16%	-20%	-25%	-9%	-8%
Cover Habitat (Acres)	-20%	-23%	-26%	-25%	-33%	-16%	-14%
Turkey Roost Habitat (Acres)	-12%	-20%	-27%	-21%	-25%	0%	+8%
Squirrel Nest Habitat (Acres)	-9%	-15%	-14%	-15%	-19%	-8%	-7%
Wildlife Forage and Herbaceous Cover. (WAUMs)	+30%	+2%	+22%	-17%	-11%	+56%	+136%

Even though the quantity of habitat components may decline under certain alternatives, the levels of coordination and improvement can offset the overall effects on wildlife carrying capacity.

Effects of alternatives on quality of wildlife habitat is summarized below. This table displays the relative difference in levels of habitat coordination, planning and improvement. The percent of change under each alternative is a comparison of fifth period levels to existing 1980 levels.

Percent Change in Coordination and Habitat Improvements by End of Fifth Period Compared to Existing Levels.

Comparison to Current Direct and Indirect Habitat Improvement	PA	Alternative					
		A	B	C	D	E	F
	+117%	+17%	+146%	-25%	-25%	+148%	+767%

Both quantity and quality of wildlife habitat is summarized below. Under some alternatives, the level of coordination and improvement associated with quality habitat can offset the overall effect on wildlife carrying capacity.

TABLE 2 Issue Resolution (continued)

Overall Effect of Each Alternative on Both Quality and Quantity of Existing Habitat Available for Wildlife Use.

Alternative	Effect on Levels of Habitat Diversity and Carrying Capacity
PA	Moderate increase
A	Slight decline
B	Moderately low increase
C	Moderate decline
D	Moderate decline
E	Significant increase
F	Substantial increase

Alternative A: Wildlife forage and herbaceous cover availability will be maintained at approximately the existing level. Quantities of coniferous forest habitats will be reduced. Habitat distribution and habitat diversity will be reduced. The unnatural trends toward reduced habitat diversity caused by a history of fire suppression will continue in wilderness areas. Continued trends toward disproportionate levels of early successional stages will continue in nonwilderness areas. Coordination with other resource uses is primarily limited to mitigation of habitats on a project by project basis. General habitat guidelines will normally be involved except where sensitive species habitats are identified. Specific inventories and plans for future habitats primarily emphasize needs of threatened and endangered species or other species nearing minimum viable population levels. A slight decline in the existing habitat carrying capacity will occur by the end of the fifth time period. Recovery of threatened and endangered species habitat will be a slow process under current management levels.

PA Alternative: The Proposed Action Alternative is similar to Alternative E except that both quantity and distribution of certain habitats such as turkey roosts and available wildlife forage would be somewhat lower. Coordination and habitat improvement is also 20 percent lower resulting in a moderate overall improvement level under this alternative. The PA Alternative includes prescribed fire from unplanned and planned ignition. This will aid restoration of natural habitat diversity in wilderness areas. Inventories and plans for future habitats enable adequate integration of species habitat needs with other resource uses and also enable establishment of priorities for maintenance and improvement of habitats. A moderate overall increase in existing habitat carrying capacity will occur by the end of the fifth time period. Timeframes for recovery of a number of threatened and endangered species extend beyond the fifth time period.

Alternative C: This alternatives provide for maintaining habitat quality above Alternative A. Forage and herbaceous habitats are increased. Most coniferous habitats are reduced below the levels in Alternative A, but the quality and distribution is increased. Both of these alternatives include prescribed natural fire and/or planned ignitions to restore natural habitat diversity in wilderness areas. Inventories and plans for future habitats will enable an adequate integration of species habitat needs with other resource uses and enables establishment of priorities for maintenance and improvement of habitats. A moderately-low overall increase in existing habitat carrying capacity will occur by the end of the fifth time period.

Alternatives C and D: These alternatives result in a reduction in wildlife habitat capabilities on the Forest to a level approximately 25 percent below existing status. Habitat diversity, improvement, and coordination will be substantially reduced. Existing downward trends in wilderness habitat diversity will continue. Habitats for wildlife outside wilderness will continue trends toward unnaturally large zones of early successional stages along with limited distributions of late successional stages. Emphasis on habitat diversity will be limited to relatively small areas necessary to support threatened and endangered species and other species nearing minimum viable population levels. Species whose habitat requirements are not in conflict with accelerated livestock forage use or timber harvest should remain at or above existing population levels. Recovery of threatened and endangered species will be very slow as plans, coordination, and improvements are limited.

Alternative E: This alternative ranks second in quantity and quality of wildlife habitats. Wildlife forage availability will increase 56 percent. Capabilities for habitat restoration, improvement and coordination is substantially higher than in Alternative A. This level of coordination and improvement will result in a significant increase on habitat carrying capacity by the end of the fifth time period. Increased habitat diversity in wilderness will occur, however levels of prescribed natural fire and/or planned ignitions will be below those in Alternatives F and PA. Time frames for recovery of some threatened and endangered species on the Forest will be extended beyond the fifth time period.

TABLE 2 Issue Resolution (continued)

Alternative F: This alternative best meets a natural distribution of habitats from a habitat capability standpoint. Under this alternative, there is a buildup of habitat components in currently deficient areas. A slight reduction in the high successional stage habitats (i.e., old growth, etc.) will occur in some areas as habitat distribution is achieved. This will occur specifically in wilderness areas where reduced fire occurrence has interrupted the natural maintenance and creation of early successional stages. Wildlife forage and herbaceous cover availability will be increased to a level approximately two times the current level. Direct and indirect habitat improvements are at levels which substantially increase habitat carrying capacity and enable capabilities for recovery of most threatened and endangered species on the Forest by the end of the fifth period.

Issue: [6] Construct, Operate, and Maintain Transportation Facilities (Road Maintenance)

The concern is road maintenance, the possible disinvestment occurring as a result of insufficient road maintenance, and the resulting impacts to other resources and uses.

Alternative A: The maintenance activities on the roads will remain below prescribed standards and will result in further deterioration of the roads system. Many roads will have to be closed. Closures will result in restricted access for recreationists, management, and industrial uses such as minerals.

Alternative PA: The overall maintenance condition of the roads will improve during the first period resulting in higher safety on arterial and collector roads (main roads). Access will become restricted on a few local roads (secondary roads). Conditions will continue to improve in periods 2 through 5 to the extent that many roads will be maintained to the prescribed maintenance level. The number of miles of roads not maintained to standard will decrease over time. This alternative is the best in resolving this issue.

Alternatives B,C, and D: Maintenance will be sufficient to maintain arterial and collector roads (main roads) to prescribed standards. Access for recreationists, management, and industrial users will be at a safe level. Access for minerals exploration and removal will be increased.

Alternative E: Maintenance will be sufficient to maintain most system roads to prescribed levels.

Alternative F: Arterial and collector roads will be maintained at prescribed levels. Local roads maintained below standard will be reduced substantially below the Current Alternative level but will increase somewhat over time.

Issue: [7] Provide for Various Wilderness Management Options (Recommendation of Wilderness Study Areas)

As a result of the New Mexico Wilderness Bill, two areas on the Gila (Hells Hole and Lower San Francisco) are allocated for wilderness study. The recommendation of these areas to either Wilderness or NonWilderness is the issue.

These two areas are recommended for Wilderness designation in Alternative F and Alternative E. Under the Wilderness designation the areas would be closed to vehicle use. All other alternatives recommend both areas for nonwilderness uses. In all of the alternatives, except PA, E, and F, the areas would remain open for vehicle use and for other uses. In the Proposed Action Alternative, the Lower San Francisco River area would be closed to vehicle use from Mule Creek to the State line.

Issue: [8] Riparian Habitat

Riparian stand structure, composition, and carrying capacity is affected by levels of various activities. Four primary activities were tracked to compare expected changes in existing riparian characteristics. The following table compares resulting effects of each activity on existing riparian vegetation characteristics.

Percentages represent each activity's estimated management effect on health of existing riparian ecosystems.

TABLE 2 Issue Resolution (continued)

Estimated Percent of Change in Existing Riparian Stand Structure, Composition, Condition, and Habitat Carrying Capacity Expected by Period 5.

Estimated Management Effect on Health of Riparian Ecosystems

Activity	Alternative						
	PA	A	B	C	D	E	F
Livestock management	+10	-10	+10	-25	-20	+25	+100
Timber harvest levels adjacent to riparian zones	-5	-10	-10	-20	-25	0	0
Riparian habitat coordination and improvement	+11	+3	+12	-25	-25	+15	+200
Watershed protection levels	+10	-20	+10	-20	-20	+15	+30

A summary of the overall effect of the various activities on the Health of Riparian Ecosystems is included in the following comparison of alternatives.

Alternative A: This alternative results in a slight decline in existing riparian condition and habitat diversity as activities affecting stand structure and composition outweigh levels of coordination and improvement. The regional goal of having all riparian areas in satisfactory or better condition by 2030 would not be met.

Alternative PA and B: These alternatives result in some improvement in existing riparian condition and moderate increase in habitat diversity. Riparian areas would be in satisfactory or better condition by the end of the fourth decade.

Alternatives C and D: These alternatives result in a significant decline in riparian condition and habitat diversity. Regional riparian goals would not be met.

Alternative E: This alternative provides the second best improvement, however it is constrained by the levels of riparian improvement projects and coordination with activities affecting riparian condition. Riparian areas would be in satisfactory or better condition by the end of the third decade.

Alternative F: This alternative results in the greatest improvement in riparian stand structure, composition, condition, and habitat carrying capacity. It includes intensive habitat coordination and improvement along with reduced livestock concentration in riparian zones. This stimulates a substantial improvement in riparian stand structure, composition, and condition classes on the Forest. Improvement in riparian and fish habitats would be rapid and continuing.

Alternative Acreage prescriptions
Distribution

Each alternative results in different combinations of management

and different acreages assigned to various management prescriptions. Management prescriptions have been grouped into 13 management emphasis categories. One way to evaluate the effects of the alternatives is to compare the acreages assigned to the management emphasis categories in each alternative. Table 3 shows the acres assigned to each category by alternative. Additional detail regarding the prescriptions and acreage assignments for the benchmarks can be found in Appendix B.

TABLE 3 Acreage Assignments by Prescription for Each Alternative (M/Acres)

Prescription 1/	Alternative						
	PA	A	B	C	D	E	F
W	0	0	0	0	0	421043	2257212
B	113422	0	64175	0	0	69511	32323
C	3644	0	0	195253	244174	4906	0
O	2570	0	0	1083376	1635670	229644	174002
T	0	0	0	4475	26219	2265	49962
U	60130	3342608	26002	466717	615876	424748	421586
G	1754538	0	1305901	415269	265205	1016559	16652
R	23216	0	36967	1124156	517833	439244	0
J	0	0	0	51525	35593	423138	0
J	0	0	0	0	0	0	0
K	359171	0	1708400	0	0	95565	647
L	166791	0	125686	0	0	0	0
M	659126	0	75476	1837	1838	215984	390214

1/ See Appendix B for definitions and descriptions of general mitigation measures.

Table 3 above shows the acres distributed to the 12 management emphasis categories. Alternative A was limited to current emphasis (U). The PA alternative retains a proportion of the current emphasis (U) but contains increased emphasis on wildlife through prescriptions B, K, L, and M. Alternative B retains a proportion of current prescription (U) as well, and a high level of timber emphasis through prescriptions G and K. Alternative C shifts emphasis from current to prescriptions R and G. These prescriptions provide for the management of timber and range at a high intensity level. The least productive sites are managed at a low intensity level (prescription O). Alternative D is similar to Alternative C; however, only the most productive rangeland is managed at a high intensity level (prescription R) and the remainder is managed at current or low (prescriptions O and U). Alternative E emphasizes current and high intensity timber management (prescriptions U, G, and R) and a higher intensity of wildlife management on some areas (prescriptions W and B). Alternative F emphasizes high intensity wildlife management (prescriptions W, B, and M) while reducing timber management to low level of intensity (prescription O).

Acres Available

Because alternatives result in different combinations of management prescriptions as well as different assignments of acreage to management prescriptions, there are differences between alternatives in total acreage available for timber harvest, livestock grazing, developed recreation sites, and minerals exploration and development. The differences result from variations in goals and objectives between alternatives. Table 4 displays the acreage available for timber harvest, livestock grazing, developed recreation, and minerals exploration and development by alternative.

TABLE 4 Acreage Available by Alternative

Alternative	Suitable Timber	Livestock Grazing	Developed Recreation	Minerals Exploration and Development	
				Locatable	Leasable
PA	272,174	2,308,393	314	2,531,222	2,541,000
A	335,203	2,308,393	250	2,533,722	2,522,000
B	360,368	2,308,393	350	2,550,722	2,545,000
C	351,697	2,308,393	250	2,550,722	2,545,000
D	412,163	2,308,393	250	2,533,722	2,541,000
E	277,894	2,308,393	250	2,533,722	2,541,000
F	303,306	2,308,393	250	2,494,464	2,522,000

Discussion

There are significant variations in the acreage of land selected for timber harvest and developed recreation between the alternatives. The acreage available for minerals exploration and development varies between some of the alternatives, but the differences are less significant than for timber harvest and developed recreation. Even though available acres for livestock grazing are shown to be the same in all alternatives, indirectly the alternatives do contain variations. In the Current Alternative (Alternative A) for example, the deterioration of facilities over time will result in some parts of the Forest receiving little or no use. It is not possible to predict where these areas would be or how soon the use would decline on individual areas. As a result, even though some areas will not be used in the various alternatives, all acres were considered available.

Harvest Method
Acreage

While Table 4 shows the total acreage available for timber harvest in each alternative, the method of timber harvest is often of more interest than the total acreage available. The influence on the environment often varies more between methods of harvest than between harvesting and not harvesting. Table 5 displays the acreage in each alternative devoted to various timber harvesting methods.

TABLE 5 Acres of Timber Harvest Methods

Alternative	Type of Harvest	Decade 1
PA	Regeneration Harvest	
	Clearcut	1614
	(Shelterwood Cut)	35531
	Intermediate Harvest	23
	Removal Cuts	37767
	Precommercial Thinnings	15850
	Selective Harvest (Unevenage Mgt.)	5853
A	Salvage Harvest	13880
	Acres Harvested with Cable Systems	8992 1/
	Regeneration Harvest	
	Clearcut	0
	(Shelterwood Cut)	18771
	Intermediate Harvest	64
	Removal Cuts	70681
	Precommercial Thinnings	30740
	Selective Harvest (Unevenage Mgt.)	0
	Salvage Harvest	12640
	Acres Harvested with Cable Systems	14575 1/

TABLE 5 Acres of Timber Harvest Methods [Continued]

Alternative	Type of Harvest	Decade 1
B	Regeneration Harvest	
	Clearcut	5648
	(Shelterwood Cut)	37730
	Intermediate Harvest	69
	Removal Cuts	25498
	Precommercial Thinnings	21190
	Selective Harvest [Unevenage Mgt.]	7645
	Salvage Harvest	16440
	Acres Harvested with Cable Systems	11819 1/
C	Regeneration Harvest	
	Clearcut	0
	(Shelterwood Cut)	1715
	Intermediate Harvest	31
	Removal Cuts	67769
	Precommercial Thinnings	4980
	Selective Harvest [Unevenage Mgt.]	6040
	Salvage Harvest	16560
	Acres Harvested with Cable Systems	0 1/
D	Regeneration Harvest	
	Clearcut	0
	(Shelterwood Cut)	4217
	Intermediate Harvest	0
	Removal Cuts	58178
	Precommercial Thinnings	13280
	Selective Harvest [Unevenage Mgt.]	6932
	Salvage Harvest	14160
	Acres Harvested with Cable Systems	3991 1/
E	Regeneration Harvest	
	Clearcut	1602
	(Shelterwood Cut)	910
	Intermediate Harvest	0
	Removal Cuts	36789
	Precommercial Thinnings	4650
	Selective Harvest [Unevenage Mgt.]	2890
	Salvage Harvest	9080
	Acres Harvested with Cable Systems	3188 1/
F	Regeneration Harvest	
	Clearcut	5648
	(Shelterwood Cut)	0
	Intermediate Harvest	0
	Removal Cuts	9683
	Precommercial Thinnings	7599
	Selective Harvest [Unevenage Mgt.]	2100
	Salvage Harvest	8970
	Acres Harvested with Cable Systems	0 1/

1/ This indicates the acres of all harvest categories, for each alternative, that would be logged using cable systems.

Discussion

The total Period 1 acres logged vary from 120,256 in the Current Action Alternative (Alternative A) to a low of 25,030 in the Amenity Emphasis Alternative (Alternative F). The Commodity Emphasis Alternatives (Alternatives C and D) harvest 80,535 and 82,607 acres respectively. The variation in the number of acres harvested between the Commodity Emphasis Alternatives and the No Action Alternative results from removal of higher volumes per acre in the Commodity Emphasis Alternatives. Acres logged using the cable method vary from 14,575 acres in the No Action Alternative to zero acres in Alternatives C and F.

Because of the method used to aggregate the timber inventory data, all existing understories on the Forest are shown to be 1 to 40 years old. As a result, very few acres of intermediate cuts are shown in the first two decades. In reality, some of the precommercial thinning and some of the removal cut acres will be intermediate cuts.

Wilderness Study Areas (WSA)

The Forest contains 27,660 roadless acres within two proposed wilderness study areas.

The two proposed wilderness study areas were established as a result of the 1980 New Mexico Wilderness Act. This EIS evaluates the two areas for possible recommendation to the Administration and Congress for inclusion in the National Wilderness Preservation System. Summaries of the wilderness study areas are included in this section. A more detailed description of the two areas can be found in the Gila Technical Reports on the Hells Hole and Lower San Francisco Wilderness Study Areas. These are available at the Supervisor's Office in Silver City, New Mexico.

The Lower San Francisco Wilderness Study Area contains approximately 8800 acres. It is located west of Glenwood beginning at the confluence of Dry Creek and the San Francisco River. It includes the area bounded by the river canyon from this point to the Arizona State line. This Wilderness Study Area is approximately one mile wide.

The Wilderness Study Area has high scenic value. The river bottom is characterized by open areas and gravel bars with stands of large cottonwood and sycamore trees. The canyon is used seasonally by the Bald Eagle and the Peregrine falcon, both federally listed endangered species. The major conflict between wilderness and nonwilderness use of the canyon is vehicle use. The canyon has historically been traversed by four-wheel drive vehicles and provides a unique opportunity for this type of use. Mineral potential is low to moderate.

The Hells Hole Wilderness Study Area contains approximately 18,860 acres. The area is southwest of Glenwood and includes all of the area shown in the packet map as LTMA 1C in Management Area 4C.

The Hells Hole area is characterized by rolling hills in the northern portion of the area and by deeper valleys and more mountainous terrain in the southern portion of the area. Vegetation includes Ponderosa pine and pinyon juniper. The Southern Bald Eagle and the Peregrine Falcon, both federally listed endangered species are occasional visitors to the area. The area does not have a high potential for mineral activity. The major use of the area has been domestic livestock production. Several range improvements (fences, windmills and stocktanks) exist within the area. Most of the Ponderosa pine within the area is not considered to be suitable for timber production. Recreation use of the area is low.

The Noncommodity Emphasis Alternative (Alternative F) and the Range/Wildlife Conflict Resolution Alternative (Alternative E) include the two proposed wilderness study areas for recommendation to the National Wilderness Preservation System. In all other alternatives, the areas were allocated to other multiple use prescriptions. Table 6 displays the wilderness and nonwilderness prescription assignments by alternative. Appendix B provides details concerning the prescriptions.

TABLE 6 Wilderness Study Area Assignments by Prescription for Each Alternative (Acres)							
Prescription	PA	A	B	C	D	E	F
G	27206	0	27660	4400	23260	0	0
U	454	27660	0	0	0	0	0
I	0	0	0	23260	0	0	0
Q	0	0	0	0	4400	454	0
W	0	0	0	0	0	0	27660
L	0	0	0	0	0	27206	0

Table 6 above indicates that in Alternative F the total acreage for the two wilderness study areas is allocated to prescription W (Maximum Wildlife). In Alternative E, most of the area is allocated to a prescription that directs the management of range and wildlife at an intermediate intensity level. Because the alternatives recommend that the wilderness study areas be designated wilderness, only activities which enhance or complement the wilderness designation will be allowed. Since the only suitable timber is located in the Hells Hole Wilderness Study Area, any proposed timber activity in the other alternatives would occur only within this area. It is expected that any anticipated activities that would occur in the San Francisco Wilderness Study Area would have insignificant biological and physical impacts on the area. Little change is expected as a result of a nonwilderness recommendation. For those alternatives where the area is recommended for nonwilderness uses, the existing undeveloped character would be lost for a small portion of the Hells Hole area as fuelwood and timber is harvested. The high commodity emphasis alternatives (C and D) would result in the most change.

Wild & Scenic Rivers

Two river systems have been named by the National Park Service as qualified for classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers.

The San Francisco River includes the entire system within New Mexico, which totals approximately 91 miles on National Forest lands. The system was broken down into ten segments for study purposes by the Forest I.D. team. Each segment represented a unique entity possessing similar characteristics which could be addressed individually. These segments were classified as being eligible as Wild, Scenic or Recreation rivers using the classification criteria published in the Federal Register on September 7, 1982 (Vol. 47, No. 173). If a segment did not meet a significant number of the criteria or if the cost of acquisition of land or an interest in land needed to manage the segment as a Wild, Scenic or Recreation river was not feasible, the river segment was considered not eligible or not suitable. A complete description of the evaluation process is in the Gila National Forest Planning Records available at the Forest Supervisors Office. The segment breakdown for the San Francisco River System follows:

TABLE 7 San Francisco River Wild and Scenic Eligibility						
Seg.	Description	Study	N.F. Eligibility			
		Miles	Miles	Wild	Scenic	Recreation
1.	Luna Lake Az. to Head of Ditch	8	8	-	8	-
2.	Through Community of Luna	6	0	-	-	-
3.	To Pvt. Land Centerfire Cr.	5	4	-	4	-
4.	To Bill Lewis Springs	5	5	5	-	-
5.	To Sawmill	14	4	-	-	-
6.	To Upriver Bridge Crossing	18	14	-	-	-
7.	To Lower end of Alma	7	1	-	-	-
8.	Lower Alma to Upper Glenwood	5	5	5	-	-
9.	Glenwood to Frisco Hot Springs	6	1.5	-	-	-
10.	Frisco Hot Spring to State Line	17	17	17	-	-
		91	59.5	27	12	0

The Gila River was broken into three segments. The segments and descriptions are:

TABLE 8 Gila River Wild and Scenic River Eligibility

Seg.	Description	Study	N.F.	Eligibility		
		Miles	Miles	Wild	Scenic	Recreation
1.	From Forks to Turkey Creek	28	28	28	-	-
2.	Turkey Cr. To Forest Bndry. to Forest Bndry. Burros	10	5	-	-	5
3.	From Bird Area, Burros, to Forest Bndry., Burros.	8	8	8	-	-
		46	41	36	0	5

In Alternative F, all eligible and suitable segments of the San Francisco River will be recommended for classification. This will place 27 miles of river in Wild and 12 miles in Scenic categories. None of the segments will qualify under the Recreation category. Only those segment miles falling within National Forest lands will be classified. Of the segments which qualify, segment 10 possesses the greatest contiguous mileage. This segment also falls within the Lower San Francisco Wilderness Study Area which will also be proposed for Wilderness classification under Alternatives F. If the wilderness study area should fail to be selected by Congress as a Wilderness Area, then the river could be classified as wild and would then conform to all regulations governing wild river status.

In Alternative F, segments two and three of the Gila River will be recommended for classification. This will place eight miles of river in the wild category and five miles in the recreation category. Segment one is within the Gila Wilderness. As a result, it was not recommended for a wild classification under the River Act. The wild river characteristics are already preserved.

No segments of either river are recommended for classification under the Wild and Scenic River Act in Alternatives A,B,C,D, or E.

Resource Outputs

Table S displays the alternative and selected benchmark outputs for the first five ten-year time periods. The benchmarks are included so the alternatives can be viewed in perspective with the minimum level and maximum single resource outputs. The benchmarks do not contain all the constraints that were applied to the alternatives to make them financially and legally feasible. The units of measure are indicated by each output.

TABLE 9 Average Annual Output by Alternative and Selected Benchmark
Output: Allowable Sale Quantity [Net Merchantable Timber Volume] MCF/yr
Nonpriced Output
Alternative

Alternative	Period				
	1	2	3	4	5
Min Level	0	0	0	0	0
Max PNK Assigned	6480.8	6480.8	6480.8	6480.8	6480.8
Max Timber	14957	14957	14957	14957	14957
Max Range	10021	12526	15658	18239	13697
PA	8326.5	8326.5	8326.5	8326.5	8326.5
A	8288.7	8288.7	10712.9	11444.2	11444.2
B	9807.3	9807.3	11128.2	11128.2	11128.2
C	11127.5	11160.0	11160.0	11160.0	11160.0
D	13551.6	13551.6	13551.6	13551.6	13551.6
E	7186.8	7186.8	7186.8	7186.8	7186.8
F	3486.6	7269.9	7269.9	7269.9	7269.9

Output: Net Sawtimber Portion of Allowable Sale Quantity [MBF/year]
Alternative

Alternative	Period				
	1	2	3	4	5
Min Level	0	0	0	0	0
Max PNK Assigned	24590	23676	24147	20823	20429
Max Timber	57981	54774	55599	48650	50207
Max Range	39394	46366	57695	64266	46970
PA	30000	30000	30000	30000	30000
A	31000	30239	36208	39655	46173
B	36877	36746	40639	33077	37776
C	42666	40790	40735	38697	41246
D	53089	50166	48422	46622	47874
E	28152	26349	27157	23824	25037
F	13803	26376	25442	25616	24792

Output: Net Products [MBF/yr]

Alternative	Period				
	1	2	3	4	5
Min Level	0	0	0	0	0
Max PNK Assigned	.8	213	333	2869	3650
Max Timber	0	1346	2705	4806	5511
Max Range	0	782	2418	3763	4831
PA	548.0	658	1174	3134.8	3858.8
A	3.3	787	797	3299	3900.8
B	2.5	566	1341.7	5847.4	4769.1
C	1.5	519.9	2558.1	2981.7	2567.4
D	0	867.1	3296.7	3181.9	3650.9
E	0	259.7	657.6	3044.5	1969.4
F	0	259.3	383.2	2222.4	2249.1

Output: Long Term Sustained Yield Capacity [MCF/yr]

Alternative	Period				
	1	2	3	4	5
Min Level	0	0	0	0	0
Max PNK Assigned	9223.5	9223.5	9223.5	9223.5	9223.5
Max Timber	17807.5	17807.5	17807.5	17807.5	17807.5
Max Range	15531.5	15531.5	15531.5	15531.5	15531.5
PA	10604.5	10604.5	10604.5	10604.5	10604.5
A	13507.8	13507.8	13507.8	13507.8	13507.8
B	13770.1	13770.1	13770.1	13770.1	13770.1
C	13895.4	13895.4	13895.4	13895.4	13895.4
D	16928.4	16928.4	16928.4	16928.4	16928.4
E	9699.3	9699.3	9699.3	9699.3	9699.3
F	10004.0	10004.0	10004.0	10004.0	10004.0

TABLE 9 Average Annual Output by Alternative & Selected Benchmark (Continued)
Output: All Fuelwood (MBF/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	0	0	0	0	0
Max PNV Assigned	10378.5	13250.8	12916.9	12788.6	11721.6
Max Timber	12312.6	14534.0	14479.0	15630.2	13532.1
Max Range	16805.7	18559.5	20090.4	20816.4	17975.7
PA	11887.3	12753.8	14927.4	15199.2	14835.3
A	7734.5	7988.2	9282.6	9150.6	10591.0
B	10409.8	12056.4	14602.5	15480.0	14918.3
C	9235.5	9930.4	11238.8	11929.0	10632.6
D	9844.6	10339.7	11620.2	11829.5	10732.9
E	6965.9	9265.8	11165.1	11977.0	10258.8
F	6297.5	9021.2	9774.5	10807.7	8451.1

Output: Dispersed Recreation (MRVD/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	447.5	358	286.4	220.1	183.3
Max PNV Assigned	447.5	543.0	660.7	804.4	965.6
Max Timber	447.5	543.0	660.7	804.4	965.6
Max Range	447.5	543.0	660.7	804.4	965.6
PA	447.5	543.8	662.5	806.5	967.9
A	447.5	543.8	662.5	806.5	967.9
B	447.5	543.8	662.5	806.5	967.9
C	447.5	543.0	660.7	804.4	965.6
D	447.5	543.0	660.7	804.4	965.6
E	446.1	542.1	660.6	804.6	963.9
F	446.1	542.1	660.6	804.6	965.9

Output: Wildlife Recreation (MRVD/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	40	30	28	28	27
Max PNV Assigned	419	501	594	658	718
Max Timber	320	322	367	389	442
Max Range	377	339	306	272	269
PA	317	326	338	383	355
A	310	277	262	235	243
B	297	309	324	328	350
C	284	223	189	155	137
D	307	230	188	161	148
E	328	347	377	386	403
F	422	494	577	633	691

Output: Wilderness Recreation (MRVD/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	76.4	73.9	73.7	73.4	73.2
Max PNV Assigned	87.3	104.1	112.4	114.5	117.2
Max Timber	87.3	104.1	112.4	114.5	117.2
Max Range	87.3	104.1	112.4	114.5	117.2
PA	87.3	104.1	112.4	114.5	117.2
A	87.3	104.1	112.4	114.5	117.2
B	87.3	104.1	112.4	114.5	117.2
C	87.3	104.1	112.4	114.5	117.2
D	87.3	104.1	112.4	114.5	117.2
E	88.9	106.0	114.5	116.7	119.5
F	88.9	106.0	114.5	116.7	119.5

TABLE 9. Average Annual Output by Alternative & Selected Benchmark (Continued)
Output: Developed Recreation (MRVD/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	171.4	0	0	0	0
Max PMV Assigned	171.4	190.8	171.7	154.5	139.1
Max Timber	171.4	190.8	171.7	154.5	139.1
Max Range	171.4	190.8	171.7	154.4	139.1
PA	171.4	190.8	190.8	190.8	190.8
A	171.4	190.8	171.7	154.5	139.1
B	171.4	252.6	275.0	275.0	275.0
C	171.4	190.8	171.7	154.4	139.1
D	171.4	190.8	171.7	154.4	139.1
E	171.4	190.8	190.8	190.8	190.8
F	171.4	190.8	190.8	190.8	190.8

Output: Permitted Use (AUM/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	0	0	0	0	0
Max PMV Assigned	339262	321023	293255	289588	285097
Max Timber	339367	322100	295413	292571	287002
Max Range	355211	372011	400882	418082	434573
PA	347266	345837	346634	350000	350000
A	338332	321574	298556	292650	289377
B	349001	345365	346343	352005	354000
C	355211	372011	400000	400000	400000
D	339734	334097	334095	337878	340000
E	350305	352144	361346	371916	380000
F	314151	310577	293050	289842	284547

Output: Grazing Capacity (AUM/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	0	0	0	0	0
Max PMV Assigned	314564	310972	293255	299612	285166
Max Timber	314940	312562	295413	292571	287002
Max Range	342281	372011	400882	418082	434573
PA	329984	345837	346634	350000	350000
A	314422	312402	298556	292650	289377
B	330949	345364	346343	352005	354000
C	342201	372011	400000	400000	400000
D	317598	334097	334095	337878	340000
E	330602	352144	361346	371916	380000
F	314151	310577	293050	289842	284547

Output: Water Yield (AcFt/yr)

Alternative	Period				
	1	2	3	4	5
Min Level	337860	337860	320870	305000	290000
Max PMV Assigned	335708	336418	336499	337041	337504
Max Timber	336069	336362	336263	337548	337466
Max Range	355724	336610	337443	339426	339064
PA	337083	337106	337473	338083	338167
A	335892	335631	336255	335471	336000
B	336334	336686	337091	337666	337776
C	335819	336485	336748	337328	337327
D	335559	336361	336747	337095	337193
E	336221	336735	336871	337556	337673
F	335477	336166	335908	336796	337056

Discussion

The Minimum Level Benchmark defines the least cost program for keeping the Forest in public ownership. It provides for protection of soil and water resources and productivity of the land.

It also provides for the protection of life, health, and safety of the incidental user, the prevention of environmental damage to adjoining lands, and the administration of established special uses and minerals. The purpose was to identify naturally occurring outputs that are harvested without direct management actions.

The Maximum PMV Assigned Value Benchmark represents the most cost efficient method of managing the Forest based on resources having an established market or assigned value and the associated costs of producing those resource outputs. These, along with the Maximum Range and Maximum Timber Benchmarks, are included for comparative purposes.

Alternative A displays the consequences of continuing with the current management direction. This is important because it establishes a baseline from which to compare the effect of analyzing other combinations of management prescriptions to attain specific resource outputs or to implement specific management decisions.

In the first decade, total sawtimber and products volume are highest for the commodity emphasis alternatives (C and D). This is because of the objective of the commodity alternatives to emphasize market outputs. Alternatives PA, A, and B provide a level of timber related outputs between the level provided by the commodity emphasis alternatives and the amenity emphasis alternatives.

Dispersed recreation and wildlife recreation do not vary significantly for any of the alternatives. This is because most of the projected need can be met without a significant increase in costs to the Forest Service; however, alternatives that provide higher funding levels also provide higher quality levels of experience. As developed recreation facilities begin to deteriorate, they will not be replaced in alternatives C and D. The result is a reduction in developed recreation visitor days (RVDs). Wildlife RVDs are higher for wildlife emphasis alternatives E and F. Alternatives PA, A, and B provide a level of wildlife outputs between alternatives E and F and the commodity emphasis alternatives (C and D).

Unless the objective of the alternative was to achieve a high level of grazing capacity (i.e. alternatives C and E) a level of domestic livestock grazing in the lower end of the decision space results for all alternatives. This is because the monetary costs necessary to provide a high level of outputs exceed the monetary benefit. The commodity emphasis alternatives (C and D) and the Range/Wildlife Conflict Resolution Alternative (E) provide the highest level of range outputs. In all alternatives, except A and F, permitted use is scheduled to equal capacity by the second decade. Alternative A balances capacity and use in the third decade and Alternative F balances capacity and use in the first decade.

Costs

Table 10 displays the costs of implementing the alternatives and selected benchmarks for all five of the ten-year time periods. They are expressed as average annual figures in thousands of dollars. The benchmarks were included so the alternatives can be viewed in perspective. The benchmarks do not contain all the constraints that were applied to the alternatives to make them financially and legally feasible.

TABLE 10. Average Annual Cost by Alternatives and Selected Benchmarks-M Dollars/Year

Output/ Activity	PA	A	B	C	D	E	F	Min Level	Max Assigned	Max Timber	Max Range
BUDGET TO IMPLEMENT											
Period											
1	7863	7798	8230	7983	7968	7706	7728	1102	8108	10406	8375
2	8441	7799	9544	9130	9231	8300	8835	1102	8472	9759	8726
3	8362	8189	9355	8336	8389	7953	8839	1102	8954	9908	8957
4	8425	7584	9731	8762	8712	8293	9301	1102	9260	10825	9773
5	8485	7669	10663	8259	8365	9215	9480	1102	10285	10854	8866
O&M EXCEPT ROADS											
Period											
1	6076	5797	7082	6300	6502	5950	6142	1102	6381	7072	6543
2	6390	5603	7148	6599	669F	6148	648F	1102	6445	7055	6693
3	6725	5885	7191	6415	6580	6057	6626	1102	6631	716F	6879
4	6450	5961	7246	6529	6603	6184	6735	1102	6675	7162	7051
5	6517	6073	8246	6445	6652	7176	6802	1102	7303	7296	6809
O&M ROADS											
Period											
1	546	446	669	672	672	667	468	--	568	672	415
2	685	446	674	672	672	667	468	--	568	672	412
3	685	446	674	672	672	667	468	--	568	672	412
4	685	446	678	672	672	667	468	--	568	672	415
5	685	446	665	672	672	667	468	--	568	672	415
CAPITAL INVEST. EXCEPT ROADS & FACILITIES											
Period											
1	982	1274	1181	775	555	897	985	--	890	2300	1122
2	1089	1230	1424	1482	1483	1175	1574	--	1154	1701	1289
3	1052	1484	1191	938	763	965	1476	--	1448	1782	1292
4	953	808	1333	1160	982	1108	1826	--	1707	2441	1840
5	995	808	1422	812	660	1112	2021	--	2137	2446	1250
CAPITAL INVEST. ROADS & FACILITIES CONST./RECONST.											
Period											
1	259	281	298	236	239	192	103	--	269	362	295
2	277	320	297	377	380	310	305	--	265	331	332
3	253	374	298	311	374	264	269	--	307	368	374
4	337	369	474	401	454	333	272	--	310	550	467
5	288	342	330	330	381	260	189	--	277	440	392
TOTAL COST 1/											
Period											
1	10455.5	10127.8	11649.8	10525.8	11163.8	9965.7	9135.4	1102	11004.9	14006.5	11308.2
2	11541.5	10162.2	11872.4	12675.6	12621.2	10566.3	11083.7	1102	10655.2	13234.6	11789.8
3	11539.3	10664.3	12200.6	11688.0	11677.1	10078.6	11049.1	1102	11817.7	14123.6	13066.1
4	12055.9	10038.2	12346.9	12513.6	12145.9	10730.2	11466.4	1102	12105.6	14345.2	14882.3
5	12658.3	10114.9	13777.0	12468.6	11591.4	11371.4	11318.1	1102	12168.1	13897.3	13160.3

1/ Total costs include Forest service budget costs, nonbudget costs, and user costs tracked in FORPLAN.

Discussion

Costs to implement the alternatives vary only slightly except for Alternative B (Resource Planning Act Alternative). This is because of the budget constraints that exist on all alternatives except the Resource Planning Act (RPA) Alternative. Operation and maintenance costs are similar except for the RPA Alternative. In an effort to accomplish the target levels set by the Regional Guide, it is higher. Operation and maintenance (roads) is generally higher for the alternatives that harvest more timber. Capital investment costs are low for the commodity emphasis alternatives because regeneration activities are scheduled in the second decade. The construction of recreation facilities are limited under the commodity alternatives as well. This is the result of the first decade budget constraint. Capital investment costs (roads and facilities) are higher for the RPA Alternative because of the assigned targets. Additional dollars are needed for roads in the commodity emphasis alternatives (C&D). Costs are stated in 1980 4th quarter dollars.

Benefits

Table 11 shows the average annual resource benefits for the major resources having benefit values. The values displayed are undiscounted benefits for each of the first five ten-year time periods. This data is useful to evaluate trends over time in resource production and value. Water yield benefits are shown as negative benefits because of the way water yields were modeled in FORPLAN. Instead of estimating total water yield for each alternative and benchmarks, only the difference between existing yield and the predicted yield were estimated. Negative values indicate that the alternative or benchmark results in reduction in water yield. Table 11 also contains data on receipts to the U.S. Government, the distribution of revenues to the counties, and employment and income generated by each alternative.

The benchmarks are included so the alternatives can be viewed in perspective. The benchmarks do not contain all the constraints that were applied to the alternatives to make them financially and legally feasible.

TABLE 11 Resource Benefits by Alternatives and Benchmarks.

TABLE 11 Resource Benefits by Alternatives and Benchmarks.												
Alternative									Benchmarks			
		PA	A	B	C	D	E	F	Min Level	Max PNV Assigned	Max Timber Range	
BENEFITS												
TOTAL BENEFITS Million of dollars per year												
Period	1	16.41	15.62	16.71	16.36	17.69	15.80	16.32	3.99	17.36	18.33	17.96
	2	16.77	15.55	17.39	15.63	16.58	17.04	19.91	2.76	19.78	19.07	19.07
	3	18.81	17.56	19.68	16.64	17.05	20.02	24.24	2.78	24.47	21.74	21.55
	4	20.35	18.72	20.46	17.09	17.77	21.99	27.98	2.69	28.08	23.75	23.10
	5	22.09	21.03	22.41	18.40	19.02	24.30	31.06	2.73	31.19	26.75	22.97
TIMBER BENEFITS Thousands of dollars per year												
Period	1	2944	2977	3592	4227	5099	2666	1250	0	2336	5413	3665
	2	2961	3025	3693	4059	4959	2710	2667	0	2356	5493	4692
	3	2843	3646	3949	3959	4632	6450	2661	0	2412	5247	5592
	4	2829	4058	3425	3832	4678	2406	2593	0	2144	4927	6307
	5	2610	4563	3649	3997	4668	2517	2511	0	2111	4978	4544
RECREATION BENEFITS (Including Wildlife) Thousands of dollars per year												
Period	1	9199	9035	15814	8479	8958	8427	11467	3216	10738	9262	10482
	2	9811	8756	16367	7596	7726	7533	13464	2008	12890	9743	10100
	3	11908	9960	19292	8158	8124	8028	17777	1929	17470	12528	11024
	4	13615	10597	21098	8441	8590	8319	21308	1773	21267	14686	11500
	5	15317	12138	23110	9233	9555	9067	24254	1693	24233	17371	12708
WILDERNESS BENEFITS Thousands of dollars per year												
Period	1	885	885	885	885	885	901	901	775	885	885	885
	2	1056	1056	1056	1056	1056	1075	1075	750	1056	1056	1056
	3	1299	1299	1299	1299	1299	1327	1324	652	1299	1299	1299
	4	1428	1428	1428	1428	1428	1465	1455	915	1428	1428	1428
	5	1664	1664	1664	1664	1664	1715	1697	1039	1661	1661	1661
RANGE BENEFITS Thousands of dollars per year												
Period	1	2727	2666	2750	2799	2677	2760	2474	0	2673	2674	2799
	2	2857	2656	2853	3073	2760	2908	2566	0	2652	2661	3073
	3	2995	2580	2992	3456	2887	3122	2532	0	2534	2552	3464
	4	3084	2575	3098	3520	2973	3273	2550	0	2548	2575	3679
	5	3133	2590	3168	3580	3043	3401	2547	0	2552	2575	3889

TABLE 11 Resource Benefits by Alternatives and Benchmarks (Continued)

BENEFITS	Alternative						Benchmarks				
	PA	A	B	C	D	Min E	Max F	PNV Level	Max Assigned	Max Timber	Range
WATER YIELD BENEFITS Thousands of dollars per year											
Period 1	-12	-12	-8	-12	-14	-9	-14	0	-13	-10	-13
2	-12	-13	-6	-8	-9	-6	-10	0	-7	-10	-7
3	-7	-9	-4	-6	-6	-5	-11	0	-5	-9	-2
4	-5	-14	0	-2	-4	-1	-6	0	0	-1	10
5	-5	-11	0	-2	-3	0	-4	0	0	-2	8
RECEIPTS TO U.S. GOVT. Thousands of dollars per year											
Period 1	3597	3663	4248	4894	5738	3324	1687	13.7	2974	6052	4332
2	3613	3632	4349	4759	5589	3373	3272	0	2962	6101	5392
3	3496	4209	4600	4709	5260	3341	3107	0	2965	5804	6342
4	3289	4609	4095	4580	5312	3106	3142	0	2609	5478	7009
5	3269	5107	4322	4744	5305	3202	3050	0	2647	5517	5355
DISTRIBUTION TO STATES Thousands of dollars per year											
Period 1	899	908	1062	1224	1435	831	472	3.4	744	1513	1083
2	903	908	1067	1190	1397	843	818	0	740	1525	1348
3	874	1052	1150	1177	1315	835	777	0	741	1451	1586
4	822	1152	1024	1145	1328	777	786	0	672	1370	1772
5	817	1277	1081	1186	1326	808	762	0	662	1379	1339
EMPLOYMENT Person											
Period 1	1651	1656	1733	1751	1850	1652	1622				
INCOME Millions of dollars											
Period 1	30.8	31.1	33.0	33.7	36.1	30.8	29.1				

Discussion

Total recreation benefit values in Table 11 displayed above include wildlife benefits. Wilderness benefits are displayed separately. A review of the table shows an increase in benefits for timber and range for the alternatives that emphasize commodity outputs. A reduction in amenity emphasis benefits (recreation and wildlife) generally results in a decline in overall benefits. For the amenity emphasis alternatives, wilderness and recreation benefits increase and timber and range benefits decline. Distribution to States represents 25 percent of the total returns to the government. The local employment and income figures shown are an estimate of the total jobs and income generated by activities on the Gila National Forest for the first decade. They represent direct, indirect, and induced employment and the resulting income of the private and public sectors within Apache County in Arizona and Catron, Grant, and Sierra Counties in New Mexico. Income figures are calculated in fourth quarter 1980 dollars. The benchmarks do not contain all the constraints that were applied to the alternatives to make them financially and legally feasible, therefore, impacts for the benchmarks were not modeled.

Present Net Value Analysis

Present net value (PNV) is the criterion used to maximize net priced benefits in planning benchmarks and alternatives. The priced outputs are those that are or can be sold in the market place.

The alternatives are designed and analyzed to achieve goals and objectives for priced outputs in a manner that achieves the greatest excess in the value of priced outputs in relation to cost of production while meeting all specified constraints and objectives. The alternatives are also designed to achieve specified nonpriced outputs or benefits at the least cost to the government.

These are accomplished using constraints within the FORPLAN model. The PNv of each alternative, therefore, estimates the value of the maximum attainable net benefits of priced outputs -PNV estimates the market value of resources after all costs of producing outputs and meeting constraints have been subtracted from the value of the expected flow of priced outputs.

Table 12 presents a display of the alternatives arranged in order of increasing present value of costs (PVC). The intent is to display what happens to PNv as the present net value of the costs increases marginally from one alternative to the next. It is important to note the alternatives were not developed in order of increasing costs but are displayed in this fashion to provide a comparative analysis. Anomalies in the table are discussed briefly in the Present Net Values Tradeoffs section under the "Other Comparison" subsection.

TABLE 12 Value Analysis (millions of 1980 4th Quarter dollars)

	PA	A	MAX PNV	Alternative E	F	C	D	B
PVC	234.1	252.2	253.2	255.6	262.7	285.2	289.7	297.6
CHANGE Betw. Alt.		+18.1	+1.0	+2.4	+7.1	+22.5	+4.5	+7.9
PVB	474.3	444.5	612.7	499.2	603.9	431.7	455.8	491.7
CHANGE Betw. Alt.		-29.8	+168.2	-113.5	+104.7	-172.2	+24.1	+35.9
PNV	240.2	192.3	359.5	243.6	341.2	146.5	166.1	194.1
CHANGE Betw. Alt.		-47.9	+167.2	-115.9	+97.6	-194.7	+19.6	+28.0
PVB by Resource Category								
Developed Recreation	17.4	15.7	15.7	17.4	17.4	15.7	15.7	22.2
Disp. Rec/Wildlife	280.1	246.7	441.8	309.2	435.6	209.4	216.6	272.2
Wilderness	30.4	30.4	30.4	30.4	31.0	30.4	30.4	30.4
Sawtimber/Products	71.1	84.9	57.6	65.2	53.5	100.4	120.8	91.7
Fuelwood	2.9	1.8	2.6	2.0	1.8	2.2	2.3	2.7
Range	72.5	65.2	64.8	75.1	64.8	73.8	70.2	72.6
Water Yield	-.1	-.2	-.2	-.1	-.2	-.2	-.2	-.1
PVC by Major Budget Cost Category								
Timber	42.1	72.8	28.6	46.3	42.8	69.4	94.5	72.3
Rec./Wildlife	23.5	14.6	49.6	24.1	54.0	12.1	12.1	33.0
Range	24.2	16.9	14.8	27.6	14.6	26.4	20.5	27.0
Protection	75.1	81.2	86.2	85.5	86.1	102.9	88.2	88.3
Roads/FAO	20.9	19.6	22.5	26.7	18.7	26.0	26.0	26.7
Other	48.3	47.1	51.5	45.4	46.5	48.4	48.4	50.3

Present values for resource benefits (PVB) and associated discounted costs (PVC) are shown in Table 12 above. Benefit values for timber include market values [revenues] for sawtimber and products. Fuelwood is displayed as a separate category. Recreation benefits include separate categories for developed recreation and dispersed recreation. Dispersed recreation includes wildlife recreation visitor days. Wilderness recreation is displayed as a third recreation category. This was done to maintain consistency with all previously completed analysis. Range values consist of the total value of all permitted animal unit months of permitted grazing. The water yield benefit is based on the assigned value of an acre foot of water. Only the incremental increase or decrease in water yield from the existing level is valued.

The present value for timber costs (PVC) include funds necessary to administer the timber program on the Forest. The individual cost items tracked in FORPLAN are shown in Appendix B. The costs for recreation and wildlife, range, protection, roads and facilities, and all other costs are necessary to administer the respective programs. All benefits and costs identified are those that appear in the FORPLAN model.

For the situations where benefits and present net value (PNV) do not increase when costs increase, the emphasis is on commodity outputs. When commodity outputs are maximized in favor of noncommodity outputs, there will be reduction in PNV and benefits. This is because wildlife outputs (RVDs), which have a high benefit value and a relatively low cost, are reduced in favor of the commodity outputs which have a higher cost for comparable dollar benefits.

The greatest increase in costs between two alternatives is from \$262.7 million for Alternative F to \$285.2 million for Alternative C. The smallest increase is from \$252.2 million for Alternative A to \$253.2 million for the Maximum Present Net Value Benchmark. The variation in range is the result of the increased cost of implementing market outputs versus the cost of implementing amenity or nonmarket outputs. This is particularly evident when comparing Alternative A with the Maximum PNV Benchmark. Present value costs increase only one million dollars and the present value benefits increase \$168 million. The Maximum PNV Benchmark is free to choose the most cost efficient combination of outputs, which in this case, results in increased wildlife outputs because of the high output to cost ratio. There are fewer costs associated with managing wildlife and dispersed recreation programs than there are for the management of timber and range programs. As displayed in Table 12, the benefits associated with a noncommodity emphasis alternative are generally higher than the benefits for a commodity emphasis alternative. This is because of the high benefit values (willingness-to-pay) associated with wildlife outputs. It must be remembered that wildlife benefits do not result in actual returns to the treasury. As a result, receipts to the treasury and payments to counties in lieu of taxes are higher for the commodity emphasis alternatives (see Table 11). The affect on PNV from one alternative to the next in the table above fluctuates as per the discussion for benefits--the benefit-to-cost ratio is greater for the noncommodity emphasis alternatives than for the commodity emphasis alternatives. The primary determinant of the magnitude of both costs and priced benefits in each alternative is the timber harvest level and the level of wildlife outputs that occur.

Recreation and wildlife benefits and costs are similar across all alternatives except for the RPA Alternative (B) and the Noncommodity Emphasis Alternative (F). The high level of outputs that result in the RPA Alternative are the result of constraints implemented to meet the regional targets. Alternative F (noncommodity) places an emphasis on recreation and wildlife as outputs.

The variation in range costs and outputs between alternatives is determined by the objective of the alternative. The commodity emphasis alternatives generally incorporate higher range outputs. "Other" costs include administrative and support costs. These increase as total costs increase, but at a slower rate. Many of these "Other" costs are fixed overhead costs.

Nonpriced Benefits

Nonpriced benefits include on-site outputs or effects. Nonpriced benefits are those benefits for which no monetary value or price can be determined. Examples can include: impacts on local employment, cultural resources, visual quality, watershed condition, quality recreation experience, threatened and endangered species, reduction in soil loss, riparian area rehabilitation, fire protection/suppression, and right-of-way acquisition.

Nonpriced benefits do not significantly affect priced benefits in any of the alternatives. The vast majority of the changes to costs in the alternatives can be tied directly to priced benefits. This, however, does not suggest that priced benefits do not significantly affect nonpriced benefits or that nonpriced benefits are not an important aspect of the decision making process of the Gila planning effort. A discussion of nonpriced benefits is necessary because of their contribution to net public benefits, however, there is a difficulty in comparing tradeoffs. A determination as to whether a reduction in soil loss is worth more than an increase in timber harvest becomes a judgement based on individual values and priorities. Present net value does not always decrease as nonpriced benefits increase since nonpriced benefits are often closely tied to the priced benefits. For example, the recreation outputs are tied to the costs of maintaining visual quality, providing for trail maintenance, off road vehicle management, etc. Each of these can be considered a nonpriced benefit which may result in the increase of recreation outputs. On the other hand, soil loss is directly related to road construction and timber harvest yet it has a negative

benefit. Large amounts of soil loss can reduce the productivity of a site which can result in secondary impacts. There is likely a trade-off relationship between soil loss and PNW. The benefit of reducing soil loss is related to the opportunity cost associated with reducing the volume of timber harvested.

In analyzing the trade-offs among alternatives, it is necessary to consider the entire array of nonpriced benefits; the relationships between priced and nonpriced benefit output levels; and the qualitative values associated with nonpriced benefits as they relate to the quantitative measure of economic efficiency represented by PNW. The judgmental comparisons of alternatives performed within this framework form the principal indicator of the net public benefit associated with each alternative.

Nonpriced benefits which are complementary to priced benefits include desirable distributive effects. These decrease as the priced benefits decline. The most significant measure of nonpriced distributive benefits is the level of local employment associated with each alternative. The range of increase (in the first decade) over the 1977 base year level varies from no increase to over 11 percent in Alternative D. Alternatives PA, and E would not measurably affect employment. Alternative F would reduce employment by 2 percent. The result is that nonpriced benefits associated with local employment are a significant factor in determining net public benefits.

Present Net Value Trade-offs

Table 13 displays the ranking of the alternatives against the Max PNW Assigned Value Benchmark. The alternatives rank in the order of decreasing present net value (PNW) from left to right. The comparisons are in millions of 1980 fourth quarter dollars discounted at four percent. The difference in PNW between alternatives is called the trade-off or opportunity cost, which is the investment opportunity foregone by implementing the alternative instead of the Maximum PNW Benchmark. The following discussion highlights the major opportunity costs of each alternative when compared to the alternative with the next highest PNW.

TABLE 13 Comparison of Alternatives with Max PNW Assigned Benchmark.

	Max PNW	Alternative						
	Assigned	F	E	PA	B	A	D	C
PNW (MM\$)	359.5	341.2	243.6	240.2	194.1	192.3	166.1	146.5
Percent of Max PNW Assigned		95%	68%	67%	54%	53%	46%	41%

Max PNW Assigned Benchmark

The objective of the Max PNW Assigned Benchmark is to maximize the PNW of outputs with market influenced monetary values and assigned monetary values. With the exception of the constraints common to each alternative (nondeclining yield, ending inventory, long-run sustained yield capacity, culmination of mean annual increment, and minimum management requirement) no constraints were placed on this run to achieve certain management practices, address issues, retain existing programs, or achieve quality levels. Refer to Appendix B for a complete discussion of constraints applied to all benchmarks and alternatives. Instead, the PNW of this benchmark is used as a reference point for evaluating the opportunity costs of achieving the objectives of the alternatives. This benchmark produced the highest PNW of all benchmarks and alternatives because the sole objective of the benchmark was to maximize economic efficiency with the least number of resource constraints.

Alternative F

The objective of this alternative is to intensively manage the Forest for amenity (nonmarket) values. The alternative incorporates a budget constraint of \$7,728,000 in the first decade. The nonmarket outputs were maximized to the extent possible within the budget constraint. Improvement of watershed condition, a nonpriced benefit, was also emphasized. Management of other resources is at the economically and environmentally feasible levels consistent with the emphasis on nonmarket oriented outputs. The opportunity cost between the Maximum PNW Benchmark and Alternative F is approximately \$18 million, or five percent. Net timber benefits were reduced about \$19 million and recreation, wildlife, and wilderness net benefits decrease approximately \$8

million. The change in the level of priced benefits account for most of the opportunity costs. However, part of the trade-off is due to the increased cost for watershed improvement projects to improve watershed condition and reduce soil loss. These are nonpriced benefits.

The relatively high present net value is tied to the benefit value assigned to wildlife. In situations where the model has the flexibility to select from all available prescriptions, it will generally select the maximum wildlife prescription. The combination of the high benefit value and the relatively low costs result in an alternative with the highest PNV.

Alternative E

Alternative E is the Range/Wildlife Conflict Resolution Alternative. This alternative was developed to address issue number two--to provide a relatively high level of permitted grazing by the fifth decade and maintain wildlife habitats at a relatively high level. Constraints that had an impact on PNV include: 1) a constraint on structural range improvements to prevent the model from delaying the implementation of all the maximum range prescriptions until the second decade; 2) a constraint on recreation to insure a minimum level of recreation visitor days necessary (included to provide a link between dispersed recreation and wildlife); 3) a constraint to increase recreation costs to be more in line with the objectives of the alternative; and 4) a floor constraint on the total number of wildlife recreation visitor days to insure the level needed to resolve the issue. A second objective function was placed on the model to provide for enough sawtimber volume to make the alternative implementable.

The opportunity cost of implementing Alternative E rather than Alternative F is approximately \$98 million. Because of the potential conflicts between range, timber, and wildlife use, there are significant differences in benefit levels which are reflected in the opportunity costs. Alternative E provides a significant increase in permitted use over the Alternative F, at an increased cost. The greatest difference occurs in wildlife recreation outputs and timber outputs and costs. When compared to Alternative F, this alternative provides 94,000 recreation visitor days fewer wildlife recreation opportunities. Timber benefits are higher in Alternative E but so are the timber costs.

Alternative PA

Alternative PA is the Proposed Action Alternative. The objectives of this alternative are: 1) to maximize PNV subject to a budget constraint; 2) to deal with and respond to issues and opportunities as much as possible; 3) to maintain or improve existing programs which are not an issue; and 4) to correct some of the deficiencies and problems documented in the discussion of other alternatives. The budget constraint reflects maximum anticipated funding and will likely limit issue resolution.

The opportunity cost of implementing the Proposed Action Alternative rather than Alternative E is \$3.4 million. Compared to Alternative E, this alternative provides slightly more timber benefits and fewer recreation and wildlife benefits. Almost all of the difference in PNV is accounted for by these changes alone. Other important differences which have a much smaller impact on PNV include increased fuelwood availability in the Proposed Action, a slight decrease in domestic livestock grazing, and a slightly lower level of road maintenance. Levels of developed and wilderness recreation are almost identical in both alternatives.

Because of the allocation imbalance that resulted when maximum wildlife prescriptions were available for selection (as a result of the benefit value assigned to wildlife), the maximum wildlife prescriptions were eliminated from consideration in this alternative. Additional constraints were required to insure the alternative satisfied the objectives described above. Refer to Appendix B for detailed discussion concerning the constraints applied to the Proposed Action Alternative. A complete listing of the constraints can be reviewed at the Gila National Forest Supervisor's Office in Silver City, New Mexico.

Alternative B

Alternative B was designed to produce the Forest's share of the national Resource Planning Act (RPA) targets assigned in the Regional Guide. The objective of the alternative was to maximize present net value (PNV) at the lowest possible cost. The combination of constraints and objective functions

came as close as possible to meeting the RPA targets. Neither the developed recreation target nor the water yield target could be met. Target levels were not assigned for support activities such as reforestation and timber stand improvement. All of the constraints applied to logical timber management areas and prescriptions in the Proposed Action Alternative were applied to this alternative. Recreation costs were increased to reflect realistic costs necessary to meet the objectives of the alternative. Floor/ceiling constraints were used on sawtimber volume and harvest methods. A floor/ceiling constraint was also used for permitted use to insure a level of outputs consistent with the RPA target. No budget constraint was applied.

The opportunity cost between the PA Alternative and Alternative D is about \$8 million. Detailed analysis revealed that the assigned developed recreation target was physically and financially infeasible. Necessary support activities to achieve the feasible targets are also included in the RPA Alternative. Most of the PNV change between the PA Alternative and Alternative E is accounted for by additional costs needed to implement Alternative B. Part of the overall net change in priced benefits is the result of increased developed recreation benefits and sawtimber and timber product benefits. Compared to Alternative PA, this alternative provides more recreation benefits and higher timber benefits. The additional developed recreation opportunities would require a significant increase in recreation facility investment. The biggest part of the change in PNV is the result of increased costs for Alternative B, where all major cost categories are higher, including support costs.

Alternative A

Alternative A is designed to continue the present management into the future. Response to issues is maintained at the status quo. The objective of this alternative is to establish a base of comparison for all other alternatives. The budget constraint is based on the Forest's 1983 fiscal year planned budget. A floor/ceiling constraint was placed on sawtimber. Only current prescriptions were used to develop the alternative. More efficient prescriptions were unavailable and, therefore, most of the opportunity cost is due to constraining the alternative to a single set of prescriptions.

The opportunity cost between Alternative A and Alternative B is approximately \$2 million. Alternative A resulted in \$14 million less in net benefits from recreation, wilderness, and wildlife. An additional \$8 million less in net benefits in timber also occurs. The decrease in net benefits is nearly offset by decreased costs in nonpriced benefits from fire protection, road maintenance, and soil and water protection. Alternative A produces fewer grazing animal unit months but yields an increase of \$2 million dollars in net range benefits. This is because of the reduction in the range budget for Alternative A. The reduction in domestic livestock grazing scheduled for Alternative A would cause social and political problems in the livestock industry. Some livestock operators would go out of business.

Alternative D

Alternative D is a commodity output alternative that emphasizes timber outputs. The alternative was set up to maximize timber in the first decade. Following this objective function, the model maximized commodity outputs and, finally, it maximized PNV with assigned values. This alternative was designed to address the issue of potential increased sawtimber supplies on the Forest in decades one and two. Management of other resources were at economically and environmentally feasible levels consistent with the emphasis on market outputs. To accomplish this, a ceiling on permitted use was set and the Forest budget constraint was relaxed slightly. Other binding constraints that affected PNV include a floor constraint on fuelwood, a floor/ceiling constraint on structural range improvements, and a constraint to force the Fort Bayard area to select a maximum commodities prescription.

The opportunity cost between Alternative D and Alternative A is \$26 million. The reduction is the result of increased timber costs, protection costs, road construction and maintenance, and range costs. With the increase in costs came increases in sawtimber and timber product benefits, fuelwood benefits, and range benefits. A corresponding decrease in dispersed and wildlife recreation benefits also occur.

Alternative C

Alternative C emphasizes market opportunities, particularly range outputs. The constraints applied were implemented in an attempt to provide for domestic livestock grazing above the existing level. An objective function was added to maximize timber in the first decade to help address the timber issue. A floor constraint was placed on fuelwood to more closely meet the expected fuelwood requirements of the alternative. A floor/ceiling constraint was also placed on structural range improvements to help even out the costs in the first two decades.

The opportunity cost between Alternative D and Alternative C is approximately \$20 million. Grazing was increased to a third decade level of 400,000 animal unit months. This resulted in higher range costs. Net benefits for recreation and wildlife are reduced slightly. Net timber benefits decrease \$20 million, while range benefits increase by nearly \$4 million dollars. The opportunity cost is mostly accounted for through changes in priced benefits tied to the objectives of the alternative. Reduced costs for timber activities in Alternative C are offset by increased range costs and protection costs. Overall net costs for the two alternatives are not significantly different.

The preceding discussion of opportunity costs between alternatives suggests that there is conflict between market and nonmarket outputs when either is emphasized in an alternative that also includes a budget constraint. A high level of both market and nonmarket outputs can be obtained but at a very high cost for which budgets cannot reasonably be expected. Generally, there is also a trade-off between grazing and timber when funding is limited because timber produces a higher net benefit than is produced by grazing. Increased benefits for grazing are achieved at a high cost.

Income Transfer

The difference between the dollar benefit values and the actual dollar receipts to the Government may be viewed as an "income transfer". The dollar benefit values used in the model represent the maximum potential value which consumers would be willing to pay for the opportunity to use the timber products, the recreation experiences, the wildlife, water, etc. Since no dollar charges are actually made from some valued outputs, the difference between the potential value and the actual charge made represents dollar values which are "transferred" from the taxpayers at large (i.e. the U.S. Treasury) to the individuals and groups who actually consume the goods and services from the Forest. These estimated "income transfers" for each Alternative are shown in Table 14. The values represent average annual transfers for each year in time period 1. The values and procedures used for benefits and receipts are shown in Appendix B.

TABLE 14. Income Transfer - Period 1 - M Dollars per Year

Resources	PA	A	B	Alternative		E	G	PNV
				C	D			
Timber Benefits 1/	2944	2977	3592	4227	5099	2666	1250	2336
Timber Receipts 2/	2944	2977	3592	4227	5099	2666	1250	2336
Income Transfer	0	0	0	0	0	0	0	0
Range Benefits	2737	2666	2750	2799	2677	2760	2668	2673
Range Receipts	639	623	642	654	625	645	623	624
Income Transfer	2098	2043	2108	2145	2052	2115	2045	2049
Rec/Wildlife Benefits	10084	9920	16699	9364	9843	10316	12368	11926
Rec/Wildlife Receipts	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
Income Transfer	10070	9906	16685	9350	9829	10302	12354	11912
Water Benefits	2129	2130	2132	2129	2127	2132	2127	2128
Water Receipts	0	0	0	0	0	0	0	0
Income Transfer	2129	2130	2132	2129	2127	2132	2127	2128

- 1/ Benefits are taken from Table 11.
- 2/ Government receipts are estimated for timber, grazing, and recreation. The receipts normally account for about 90% of the total, excluding mineral royalties, and lease payment.

As shown in the table, the largest income transfers occur as a result of the very large recreation and wildlife outputs which are produced by the Forest, and for which little or no actual charges are made.

The next largest category of income transfers is for water which flows from the Forest managed watersheds. Each of the alternatives considered would provide about \$2 million per year to downstream users. No charges are made for these outputs.

Income transfers associated with the range program amount to about two million per year in all alternatives.

There are no income transfers associated with the timber sale program in any of the alternatives. This is because the benefit values are the estimated dollar charges (actual receipts) which would be made for all timber products sold including fuelwood.

SUMMARY OF SIGNIFICANT EFFECTS

This section summarizes the significant effects of the alternatives. A complete discussion is included in Chapter 4. Chapter 3 summarizes the affected environment.

Dispersed Recreation

Alternatives PA and B provide for an increased recreation budget over time. This increased budget provides for increased maintenance of facilities and increased services as recreation demand increases. The portion of recreation quality associated with facilities will, therefore, not change. Alternative F provides for an increase in budget sufficient to increase facilities and services. This alternative increases the portion of recreation quality associated with facilities and services. In all other alternatives the portion of recreation quality associated with facilities and services would be expected to decline over time.

All alternatives except Alternatives E, F, and PA tend to reduce the acres available for semi-primitive non-motorized types of recreation and, therefore, reduce the existing mix of opportunities. Alternatives D, B, and C are expected to have the largest impact on the recreation opportunity mix. Alternative A results in areas changed, appearing more natural than in Alternatives D, B, and C.

Developed Recreation

Alternative B provides for increasing the developed recreation capacity of the Forest by increasing facilities to the maximum realistic potential. This is the only alternative that meets the expected need by the fifth decade. In Alternatives PA, E, and F, the Forest realizes a moderate increase in new sites. In Alternatives A, C, and D, no additional new facilities will be developed. In addition some existing facilities will not be maintained. Sites will be abandoned as they deteriorate.

Wilderness Recreation

Wilderness resource and experience levels remain high in Alternatives F and PA. In these alternatives, all facilities will be maintained and priority facilities will be constructed. In Alternatives E and B, some deterioration of facilities will occur. Needed maintenance will not be provided in the other alternatives (A, C, and D). Low priority facilities will be abandoned over time. Demand will be met in all alternatives.

Wilderness Study

In Alternatives E and F, the two wilderness study areas on the Forest are recommended for wilderness. These areas are recommended for nonwilderness uses in the other alternatives.

Wild and Scenic Rivers

Both the San Francisco and Gila Rivers are recommended for inclusion to the Wild and Scenic Rivers Program in Alternative F. For all other alternatives, they are not recommended for inclusion.

Undeveloped Portions of the Forest	Multiple use activities in all alternatives result in the development of some of presently undeveloped portions of the Forest. Alternative F results in the fewest acres being developed in the first decade. This alternative is followed by alternatives E, C, PA, B, D and A (listed from least to most development). In the long term, Alternative E results in the least development of the undeveloped portions of the Forest, followed by alternatives PA, A, C, F, B, and D (listed from least to most development).
Wildlife	All alternatives provide habitat suitable for maintaining at least minimum viable wildlife populations. Alternative F will provide a substantial increase in the level of habitat diversity and carrying capacity. Alternative E is the next highest. Alternative PA results in a moderate increase in carrying capacity of habitats and Alternative B results in a moderately low increase. Alternative A results in a slight decline over time and Alternatives C and D will result in a moderate decline in habitat carrying capacity and habitat diversity.
Range	All alternatives except A and F will balance permitted grazing with forage capacity by the end of the second decade. Alternatives A balances use and capacity in decade three and Alternative F balances use and capacity in decade one. Grazing capacity increases in Alternatives PA, B, C, and E. In all other alternatives it declines. In Alternatives A and D, the declines are a result of insufficient maintenance of existing facilities. In Alternative F, the decline is a result of a reduced emphasis on livestock grazing and the amount of forage allocated to wildlife. Soil loss caused by grazing is reduced over time in all alternatives.
Timber	<p>All alternatives affect the timber resource by allocating different suitable timber acreages to various intensities of management. This results in different age class distributions between alternatives and different long term sustained yield capacities and growth rates.</p> <p>The amount of the tentatively suitable timber acres allocated to timber management varies from 412,163 acres to 272,174 acres. The PA Alternative has the lowest number of suitable timber acres, followed by Alternatives E, F, A, C, B, and D. The amount of land available for timber production has a significant effect on the potential outputs of timber.</p> <p>The maximum long-term sustained yield capacity of the forest is 16,928 MCF. The PA Alternative has a long-term sustained yield capacity of 10,604. Alternative E, with a LTSYC of 9,639 MCF is the lowest. Alternatives F, PA, A, B and C (listed from the lowest to the highest) have long-term sustained yields between the high and low alternatives.</p> <p>None of the alternatives result in the hypothetical ideal timber age class distribution (equal in all age classes) by the end of the fifth period. Alternatives A and D provide the best age class distribution. From a timber perspective, Alternative F provides the least desirable distribution. It provides a high level of acres in the greater than 200 year age class. The other alternatives fall between the alternatives mentioned. All of the alternatives provide less than ideal acreages in the 21-40 and 101-120 year age classes.</p> <p>The President's Revised Statement of Policy requires that the productivity of suitable forested land be maintained or enhanced. The Statement recognizes that it will take time to achieve these goals, thus, it requires that by period 5, growth on commercial timber lands be brought to and maintained, where possible, at 90 percent of the long-term sustained yield capacity. All alternatives except Alternative A meet this goal. Alternative A provides 86 percent of the LTSYC volume.</p>
Fuelwood	Fuelwood supply and production is effected by the objectives of the alternatives. Alternative A affects fuelwood production by continuing the existing direction and managing only accessible fuelwood areas. Alternative B, C, and E provide fuelwood because of an objective to manage for a relative high level of livestock production. Pinyon and juniper stands are opened to provide more forage for domestic livestock. Alternative E, along with Alternative F manage pinyon and juniper stands to provide forage for wildlife and to provide

more diverse wildlife habitat. Alternative D has an overall goal of fiber production. Fuelwood production is part of that goal. In the PA Alternative fuelwood production results from a combination of the above objectives, but it also results from an effort to resolve the fuelwood issue to the extent possible with realistic funding levels. None of the alternatives provide the total demanded level of fuelwood needed to meet the projected future trends.

Diversity Alternatives F, E, PA, and B result in an increase in diversity (listed in order from most to least). Alternatives D, C, and A result in a decrease in diversity (listed in order from most to least)

Soil and Water All alternatives reduce soil loss over time. This reduction in soil loss varies over the next 50 years from a 19 percent reduction in Alternative D to a 21.5 percent reduction in Alternative F. The PA Alternative results in a 21.2 percent reduction. The other alternatives vary between this small range.

Watershed condition also improves in all alternatives over time. Alternatives F, E, PA, B, C, and D improve watershed conditions the fastest followed by Alternative A.

Riparian Alternative F results in the greatest improvement in riparian stand structure, composition, condition, and habitat carrying capacity. Alternative E provides the next best improvement. The PA and B Alternatives result some improvement in existing riparian condition and moderate increase in habitat diversity. Alternative A results in a slight decline in condition over time and Alternative C and D will result in a significant decline in riparian condition and habitat diversity. The Regional goal of getting all riparian areas in satisfactory or above condition would be met by the end of the third decade in Alternative E, and by the end of the fourth decade in alternatives PA and B. Alternatives A, C, and D would not accomplish the Goal. Alternative F would result in rapid improvement.

Irretrievable Commitments Irretrievable resource commitments result from allocation decisions which reduce production or use of renewable resources. Irretrievable commitments represent opportunities foregone for the period the plan is in effect and reflect tradeoffs made to integrate multiple-use considerations or meet budget limitations. Significant irretrievable effects are summarized in Table 15.

TABLE 15. Irretrievable Resource Commitments

	Alternative						
	PA	A	B	C	D	E	F
WILDLIFE RECREATION (THOUSANDS OF RECREATION VISITOR DAYS)							
High Output	422	422	422	422	422	422	422
Alt. Output	317	310	297	284	307	328	422
Irr. Comm.	105	112	125	138	115	94	0
PERMITTED GRAZING (THOUSANDS OF ANIMAL UNIT MONTHS)							
High Output	355.2	355.2	355.2	355.2	355.2	355.2	355.2
Alt. Output	347.2	338.3	349.0	355.2	339.7	350.3	314.2
Irr. Comm.	2.0	16.9	6.2	0.0	15.5	4.9	41.0
TIMBER ALLOWABLE SALE QUANTITY (MERCH. VOL. IN THOUSAND CUBIC FEET)							
High Output	13551.6	13661.6	13551.6	13551.6	13551.6	13551.6	13551.6
Alt. Output	8326.6	8288.7	9807.2	11127.5	13551.6	7186.8	3486.6
Irr. Comm.	5525.1	5262.9	3744.3	2424.1	0.0	6364.8	10065.0
LONG TERM SUSTAINED YIELD CAPACITY (MILLIONS OF CUBIC FEET)							
High Output	16.9	16.9	16.9	16.9	16.9	16.9	16.9
Alt. Output	10.6	15.5	13.8	13.9	16.9	9.7	10.0
Irr. Comm.	6.3	1.4	3.1	3.0	0.0	7.2	7.9
FUELWOOD (THOUSANDS OF BOARD FEET)							
High Output	11887.3	11887.3	11887.3	11887.3	11887.3	11887.3	11887.3
Alt. Output	11887.3	7734.5	10409.8	9235.5	9844.6	6865.9	6297.5
Irr. Comm.	0.0	4152.8	1477.5	2651.8	2042.7	4921.4	5589.8

Adverse Environmental Effects Which Cannot be Avoided Unavoidable adverse environmental effects result from managing the land for one set of resource uses at the expense of the use or condition of other resources. Management requirements in prescriptions mitigate most adverse effects by limiting the extent and duration of impacts.

Unavoidable environmental effects are:

Recreation - Temporary disruption in recreation use and changes in types of available recreation opportunities result from timber harvest and related road construction in some alternatives. Increased conflict between some user groups and deterioration of some sites result because of use in excess of capacity and reduced service level management in some alternatives.

Wilderness - In some alternatives, wilderness values are reduced where localized recreation use exceeds capacity and management is at less than standard service level.

Visual quality - In all alternatives, temporary reduction of or modification to visual quality will occur on timber sales, overstory and other vegetative modifications, mineral and mining related improvements and road construction and reconstruction projects. In some alternatives, natural appearing areas will take on a more modified appearance.

Air quality - In all alternatives, temporary reduction of air quality will occur during prescribed burning of activity generated slash and browse habitats.

Wildlife and fish - In all alternatives, temporary displacement of wildlife will occur because of timber sales, range and wildlife habitat improvement, and road construction and reconstruction. Increased disturbance to wildlife is expected where recreation use increases. In some alternatives, increased social and forage competition between elk and livestock may occur. Decreased habitat for climax wildlife species dependent upon old growth coniferous and pinyon-juniper forests will occur because of timber and fuelwood harvest as well as range and wildlife habitat improvement.

Timber and fuelwood - Reduced growth and increased mortality will occur in timber stands not allocated and scheduled as suitable or where other resources are emphasized. Slight reduction in suitable acres will occur because of construction of timber harvest roads. Reduction in pinyon-juniper lands for fuelwood harvest will occur because of range and wildlife habitat improvement.

Soil and water - Lower water quality and levels of soil loss above natural levels will occur because of multiple use activities.

3. Affected Environment

OVERVIEW

This chapter describes the environment that will be affected by implementation of the proposed Plan. It is presented in three sections. The first section describes the physical and biological setting; the second section, the socioeconomic setting; and the third, the current resource situation, anticipated future use requirements for resources, and maximum supply potential as defined by the Benchmark Analysis.

PHYSICAL AND BIOLOGICAL SETTING

The Gila National Forest, located in southwest New Mexico, is a part of the National Forest System of the United States. The Gila began as the Gila River Forest Reserve in 1899. This river land was redesignated as the Gila National Forest in 1907. Through the years several major additions resulted in alteration of the proclaimed or administrative boundary. Lands were received from the old Datil and Crook National Forests changing the proclaimed Forest boundary. The most recent change occurred in July of 1974, extending Gila National Forest administrative responsibility over Apache National Forest lands in New Mexico.

The Forest is divided into eight Ranger Districts with overall administration of 3.34 million acres of National Forest lands within Catron, Grant, Sierra, and Hidalgo Counties. Administration includes 789,386 acres classified as the Gila, Aldo Leopold, and Blue Range Wilderness areas. The diverse topography, elevations, and climatic conditions on the Gila National Forest create a diversity of landforms and plant and animal habitats.

Physiography

The Forest landscape includes a wide variety of mountainous terrain. Elevations range from about 4,200 feet in the semi-desert lowlands to almost 11,000 feet in the rugged Mogollon Mountains. Lower elevations are characterized by rolling hills dissected by moderately steep canyons and sand washes. The major river systems, the Gila and San Francisco, have carved majestic steep walled canyons through these lower zones. Higher elevations are characterized by rugged mountains, deep headwater canyons, elevated mesas, and rock walled cliffs. Rock outcrops are prevalent, with some of the most rugged and remote areas in the southwest found along the west face of the Mogollon Mountains and the east face of the Black Range mountains.

Climate

Cool summers and cold winters are typical at higher elevations of the Forest, while mild winters and warm summers occur along the lower Gila and San Francisco rivers. Extremely hot weather such as encountered in true desert occurs very rarely. Precipitation varies from 12 inches in the southern woodlands of the Forest to over 30 inches in the higher elevations in the Mogollon Mountains and Black Range. Central portions of the Forest, in both the Gila and San Francisco drainages, are in a definite rain shadow and average less than 16 inches of precipitation per year.

Moist air from the Gulf of Mexico usually causes afternoon or evening thunderstorms over the Forest from mid-July through early September. These storms are frequent but usually are of short duration and often yield heavy rain.

Storms from the Pacific, generally of longer duration occur from December through March. Snow falls during the winter in higher elevations. Drought is common in the semi-desert lower elevation portions of the Forest. During most spring and fall periods, plants suffer stress from lack of moisture. Summer and winter moisture is generally deficient two or three years out of each ten year period. About half of the Gila (generally areas above 7,000 feet) receives sufficient precipitation to support Ponderosa pine and other plant species that cannot survive in a semi-desert environment. However, even at the mid-elevations, droughts periodically affect plant growth.

Critical fire weather on the Forest usually begins in March and subsides in July when the summer rains begin. A fall fire season beginning in late September and lasting through November is also common. Strong surface winds, high temperatures, and low humidity are characteristics of the critical fire season.

Geology and soils

Varied climates, diverse topography, and a variety of rock types result in numerous different soils throughout the Forest. Most of the rocks found on the Forest were formed during the Quaternary and Tertiary time periods, both of which are in the Cenozoic era (present time to 70 million years ago). Most of the geologic types found on the Forest of this era are alluvium, Gila conglomerate, volcanic sediments, rhyolite, basalt, andesite, and latite. Other geologic types which date from the Cenozoic era to Paleozoic or Precambrian times (before 260 million years ago) have been exposed to the surface either through erosional processes or uplifting. A few of these geologic types are limestone, sandstone, and granite.

Soils formed from parent materials associated with the various rock types differ depending upon climate, position on the landform, vegetation, and erosion. Soils vary from deep stable well developed soils to shallow sensitive and weakly developed soils. Some of the sensitive soils found on the Forest have formed from alluvium, Gila conglomerate, volcanic sediments, and rhyolite geologic types. Because of the slow formation process, soil is considered a nonrenewable resource. It may take several hundred years to form one inch of soil.

Vegetation

Vegetation on the Forest is diverse and complex. Tree, shrub, grass and forb species from the Rocky Mountains and Mogollon Plateau are integrated with species from the Chihuahuan Desert. Elevation and aspect primarily control distribution while topography and soils initiate secondary distribution patterns. The highest zone encompasses the Engelmann spruce and corkbark fir community, followed by an Engelmann spruce and Douglas fir community. Douglas fir, ponderosa pine, white fir, and southwestern white pine are dominant members of the next lower community. Aspen is commonly intermixed in portions of these higher elevation zones.

Ponderosa pine intermixed with either Gambel oak or alligator bark juniper comprise most of the transition zone. The pinyon-juniper woodlands are comprised of pinyon pine, alligator bark and one-seed juniper, along with various hybrid oak and shrub communities. Characteristic shrubs include mountain mahogany, gray oak hybrids, Wrights silktassel, and ceanothus species.

The semi-desert zones at lower elevations include mesquite, yucca, cacti, sotol, desert ceanothus, beargrass, and black grama in the various communities. Because of topographic and aspect variations, many of these semi-desert communities are interspersed with species from the pinyon juniper woodland zone.

Riparian zones range from the alder-narrowleaf cottonwood zones in higher elevations to the sycamore-walnut-boxelder and Fremont cottonwood zones at the lower elevations.

Primary vegetation types on the Forest are summarized in Table 16.

Table 16. Acres of each Vegetation Type Present on the Gila National Forest.	
Vegetation Type	Acres
Mixed Conifer	277,436
Ponderosa pine	1,119,773
Woodland	1,591,022
Mountain grassland	120,334
Plains grassland	163,787
Desert shrub	43,454
Riparian	26,741

SOCIAL AND ECONOMIC SETTING

Five known cultures of man have occupied the Forest since early times. Artifacts indicate three prehistoric Indian cultures existed on the Forest until approximately 1250 A.D. Some of these semi-agricultural populations actually farmed parts of the rugged Gila mountains during later portions of their occupation. During the extended drought periods of the 13th century, the earlier Indian cultures apparently abandoned the Forest. The Apache Indians were next to claim the Gila country and utilized the Forest primarily as nomadic hunters and gatherers. Some Pueblo Indians also occupied a few northern portions of the Forest during this same time frame. Early European American settlements favored the lower Gila, San Francisco, and Mimbres River zones.

During the mid 1800s, pioneers began intermittent farming along river bottoms or engaged in cursory mining activities. Many of these early settlers were of Spanish or Mexican origin. Conflicts with Apache raiders were common and continued into the late 1800s.

The community of Pinos Altos, which dates back to the early 1850s, was the first settlement in or near the Forest. Other settlements became established during the later 1800s and early 1900s as mining towns or centers of trade for surrounding ranching, mining, hunting, and trapping activities.

Area of Influence

The Forest's primary area of influence includes Apache County in Arizona and Catron, Grant, and Sierra Counties in New Mexico. Areas of secondary influence include cities within approximately a 250 mile radius of the Forest. Albuquerque and Las Cruces, New Mexico; El Paso, Texas; and many smaller communities in both Southwest New Mexico and Southeast Arizona are within the secondary areas of influence.

Populations

The 1980 census indicates that populations in counties primarily influenced by the Forest range from 2,720 in Catron County to 26,204 in Grant County. Population growth since 1970 has been approximating two percent per year within New Mexico counties. Apache County in Arizona had a population growth rate ten percent per year.

Population growth within zones of secondary influence has been rapid in the past and is expected to continue.

Generally three cultural groups are represented within the Forest zone of influence. These groups are the Anglo, Hispanic, and Native American.

Employment and Income

The average per capita income for the three New Mexico counties in 1970 was \$2,648. By 1977 it had risen to \$4,835. For Apache County, Arizona it was \$2,101 in 1970, and \$3,734 by 1977. After correcting for inflation, this is a 36 percent increase in per capita real income in New Mexico and 32 percent in Arizona.

Most employment within the four counties influenced by the Forest is a result of mining, ranching, and timber harvest and processing. Commercial sectors (i.e. service stations, eating and drinking places, motels, etc.) also derive income from recreation. Secondary zones influenced by Forest activities also benefit from recreation associated employment.

Because of the nation's economic slump in the early 1980s, the mining industry, has seen a dramatic decrease. This has had a substantial effect on the labor force in Grant County where unemployment exceeded ten percent during years of curtailment. The labor force in Catron County has also been depressed because of the overall slump in timber harvest and processing. A reduction in the mining and timber work force in the planning area has resulted in some families moving from the area.

Life Styles, Social and Economic Situation

Communities within the Forest's zone of influence can generally be characterized as having a rural life style. Exceptions are the metropolitan areas of Albuquerque, Las Cruces, and El Paso.

The smaller communities exhibit varying degrees of dependence upon land utilization. This utilization includes logging, ranching, mining, prospecting, farming, and fuelwood gathering. Big game hunting, camping, fishing, and other outdoor recreation activities are some of the more common recreational activities in these communities. Because of this tie to the land, residents tend to support development and use of land resources while placing less emphasis on protection of areas for amenity values.

The rural community inhabitants enjoy their lifestyle with the associated freedoms it provides. They appreciate the openness of the Forest and tend to resist management direction which would limit their accustomed use of public lands.

The smaller communities also exhibit the desire to retain their rural atmosphere. This does not, however, mean that change is not possible with time. Many of the smaller communities are unable to provide total services such as grocery stores, schools, and, vehicle repair, and look for opportunities to expand their economies.

The Forest plays an important role in the economy of some of the communities which are close to the Forest boundary. The economic base in certain communities is dependent on logging or ranching activities, while other communities rely on recreation and tourism. Changes in management direction could change the economic considerations within certain communities.

In the metropolitan areas of Las Cruces, El Paso, and Albuquerque, the lifestyle is more urban. The Forest lands provide the metropolitan dweller an opportunity to get away from their every day lifestyle. They utilize these lands more for recreation and amenity values than for commodities. Activities include camping, picnicking, hunting, fishing, nature study, hiking, snow play, wilderness adventure, sightseeing, and fuelwood gathering.

The urban dweller's philosophy of management is somewhat different than that of the small community resident. They generally support amenity values. Some people do not enjoy seeing activities which alter the natural appearance of the Forest.

RESOURCE ELEMENTS

The Forest may be described in terms of resources and the support activities needed to protect these resources and to supply goods and services.

Although resources are discussed individually, management of the Forest occurs on an integrated resource basis. Each management activity affects a variety of resources. Decisions are made only after considering all potential impacts on other activities or resources. Similarly, single management activities are designed to serve a variety of resource objectives. The resources discussed below are part of a complex system with numerous interactions. The resources are described individually only to emphasize important aspects of the current situation. The discussion of these resources must be conceptually combined in order to understand the overall current situation of the Forest.

RECREATION

New Mexico, Texas, and Arizona have been among the fastest growing states in the nation. This rapid population growth is expected to continue in the future. With this population increase, the demand for goods and services, including recreation, will also increase. Located within easy driving distance of three major metropolitan areas; Albuquerque, New Mexico; El Paso, Texas; and Tucson, Arizona, the Gila National Forest will, in all probability, receive additional demands for recreation opportunities.

Dispersed Recreation

Common activities available to the public on the Gila National Forest include hiking, backpacking, horseback riding, hunting, fishing, driving for pleasure, gathering forest products, sightseeing, and other activities associated with a undeveloped environment.

There are approximately 3,327,768 acres [includes Wilderness] available on the Gila for dispersed recreation activities. The Recreation Opportunity Spectrum (ROS) breakdown for this acreage is as follows:

Primitive	526,611 acres
Semi-Primitive	787,063 acres
Semi-Primitive, Motorized	240,940 acres
Roaded-Natural	1,768,071 acres
Rural	5,083 acres
Urban	0 acres
	<u>3,327,768 acres</u>

The Recreation Opportunity Spectrum classes identified above provide a framework for defining the types of outdoor recreation opportunities and the improvement levels associated with the various recreation activities. The amount of acreage in any given class is subject to change based on the emphasis placed on a particular resource such as timber or range.

Dispersed recreation use on the Forest, including hunting and fishing, was approximately 770,000 Recreation Visitor Days (RVD) in 1981. Off-road vehicle closures, restrictions, and open use areas on the Gila have been identified as follows:

Closed to all motorized vehicles (Wilderness)	769,385 acres
Use restricted to designated roads & trails	40,563 acres
Open - No restrictions	2,513,795 acres

Due to topography, vegetation, and other natural limiting characteristics, off-road vehicle use on the Gila has been light. Most use is in support of other activities such as camping and fishing. Organized events such as motocross, trials, or other competitive activities have not been attempted. Figures on off-road vehicle use alone are not available.

Potential supply is extremely high. Actual numbers are unknown.

Projected use is anticipated to increase but will remain within tolerable levels and will, in all probability, continue to be secondary to other activities. The use of three-wheeled and four-wheeled cycles is increasing in popularity and could become a primary use.

Future Trends

The projected fifth decade for dispersed recreation is 1,062,000 recreation visitor days annually. This does not include consumptive use of wildlife or fish.

Based upon the recreation opportunity spectrum classification system, the Forest has the potential to provide approximately 5,575,000 recreation visitor days (RVDs) annually. This figure reflects the potential practical carrying capacity of the Forest for all activities associated with dispersed recreation except hunting and fishing. The dispersed recreation capacity is considerable higher than the anticipated demand.

Developed Recreation

There are 36 developed recreation sites on the Forest. These sites have a capacity of 2,858 people at one time (PAOT). The average use figure is estimated at about 30 percent of capacity. Some of the more popular sites may run as high as 40 percent. It is estimated that a 60 percent occupancy level would be the maximum carrying capacity before deterioration exceeded the Forest's capability to maintain developments in a safe and useable condition.

There are three campgrounds and a group picnic area for which user fees are collected. These sites have a use season from about May to November. This is the normal use season for most developed sites on the Forest.

Only two sites are being managed at standard service level. All remaining sites are managed at less than standard service level.

Future Trends

The projected use trend by the fifth period is about 275,000 recreation visitor days annually. To satisfy this projected use, construction of additional facilities and increased maintenance would be required. The supply potential is 251,000 recreation visitor days.

The Current Direction Alternative would provide approximately 139,000 recreation visitor days annually by the fifth period. This reflects a drop from existing use (about 171,500 RVDs) due to the deterioration of some facilities. Projected maintenance would be used to maintain more popular and valuable areas.

The Gila does not have the capability to provide high quality winter sports sites such as alpine skiing. Snow conditions are marginal in the nonwilderness portions of the Forest, making a ski area development impractical. There is enough snow, however, to provide adequate opportunity for cross country skiing and snow play (tubing and sledding).

Large developed recreation sites, such as those associated with bodies of water, are not anticipated due to the absence of the appropriate setting.

WILDERNESS

There are three wilderness areas on the Gila National Forest which include approximately 789,386 acres as follows:

Gila	558,065 acres
Aldo Leopold	202,016 acres
Blue Range	29,304 acres
	<u>789,386 acres</u>

There are two Wilderness Study Areas (WSAs) identified on the Gila. These contain an additional 27,660 acres. The two WSAs are:

Hell's Hole	18,860 acres
Lower San Francisco River	8,800 acres
	<u>27,660 acres</u>

The Lower San Francisco Wilderness Study Area is located west of Glenwood. The area begins at the confluence of Dry Creek and the San Francisco River. It includes the area bounded by the river canyon from this point to the Arizona State Line. The Wilderness Study Area is approximately one mile wide.

The Wilderness Study Area has high scenic value. The river bottom is characterized by open areas and gravel bars with stands of large cottonwood and sycamore trees. The canyon is used seasonally by the Bald Eagle and the Peregrine falcon, both federally listed endangered species. The major conflict between wilderness and nonwilderness use of the canyon is vehicle use. The canyon has historically been traversed by four-wheel drive vehicles and provides a unique opportunity for this type of use. Mineral potential is low to moderate.

The Hells Hole Wilderness Study Area contains is located southwest of Glenwood. It includes all of the area shown in the packet map as LTMA 10 in Management Area 4C.

The Hells Hole area is characterized by rolling hills in the northern portion of the area and by deeper valleys and more mountainous terrain in the southern portion of the area. Vegetation includes ponderosa pine and pinyon juniper. The Southern Bald Eagle and the Peregrine falcon, both federally listed endangered species are occasional visitors to the areas. The wilderness study area does not have a high potential for mineral activity. The major use of the area has been domestic livestock production. Several range improvements [fences, windmills and stocktanks] exist within the area. Most of the ponderosa pine within the area is not considered to be suitable for timber production. Recreation use of the area is low.

In addition to wilderness and wilderness study areas the Forest contains many areas that are undeveloped. An inventory of undeveloped areas was conducted as a part of the RARE II process. The inventory was used for evaluating areas for potential inclusion in the wilderness system. Those areas selected by Congress for wilderness were classified as a result of the New Mexico Wilderness Act. The Act also established the wilderness study areas and freed the non-selected areas for multiple-use management.

In 1980, when the New Mexico Wilderness Act was passed, the Gila administrative unit had approximately 753,000 acres of undeveloped area [not including Wilderness and Primitive areas]. The New Mexico Wilderness Act designated approximately 39,000 undeveloped acres Wilderness and released approximately 5,705 acres that were previously classified as Primitive. Since 1980, 20,610 acres have been developed. This leaves approximately 699,000 acres of undeveloped area outside of classified Wilderness. The amount of unroaded area developed by the various alternatives is discussed in Chapter 4.

Present use for the existing Wilderness areas is approximately 87,300 recreation visitor days annually.

Future Trends

The fifth decade annual demand for wilderness recreation is projected to be 130,000 recreation visitor days. This projected trend reflects the heavy growth in use on a few areas and little or no use growth on the more remote areas. If all of the classified wilderness areas were utilized equally, the maximum potential capacity would be more than 500,000 recreation visitor days.

VISUAL RESOURCE

The Gila has a well balanced and diverse visual resource base. Visual Quality Indices are:

Preservation (P)	812,851 acres
Retention (R)	44,258 acres
Partial Retention (PR)	613,340 acres
Modification (M)	1,320,132 acres
Maximum Modification (MM)	453,162 acres

The Visual Quality Indices displayed above has been adopted as the Forest's current Visual Quality Objectives. The quantities of the objectives in any given category will be limited to an assigned increase or decrease depending on the alternative.

In addition to the Visual Quality Objectives described above, an additional 6,800 acres are identified for rehabilitation. These are landscapes that are visually unacceptable because of past management practices or as a result of natural phenomenon. Gravel pits, wash cuts, road cuts, and the like are examples of target landscapes. Much of the rehabilitation can be accomplished through natural regeneration and healing processes. A small percentage will require special attention.

WILD & SCENIC RIVERS

Segments of both the Gila and San Francisco Rivers have been identified as potential Wild and Scenic Rivers.

The San Francisco River includes the entire system within New Mexico, which totals approximately 91 miles on National Forest lands. The system was broken down into ten segments for study purposes by the Forest I.D. team. Each segment represents a unique entity possessing similar characteristics which could be addressed individually. The segment breakdown for the San Francisco River System is as follows:

Seg.	Description	Study Miles	N.F. Miles	Wild	Scenic	Recreation
1.	Luna Lake Az. to Head of Ditch	8	8	-	8	-
2.	Through Community of Luna	6	0	-	-	-
3.	To Pvt. Land Centerfire Cr.	5	4	-	4	-
4.	To Bill Lewis Springs	5	5	5	-	-
5.	To Sawmill	14	4	-	-	-
6.	To Upriver Bridge Crossing	18	14	-	-	-
7.	To Lower end of Alma	7	1	-	-	-
8.	Lower Alma to Upper Glenwood	5	5	5	-	-
9.	Glenwood to Frisco Hot Springs	6	1.5	-	-	-
10.	Frisco Hot Spring to State Line	17	17	17	-	-
		91	59.5	27	12	0

The Gila River was broken into three segments. The segments and descriptions are as follows:

Seg.	Description	Study Miles	N.F. Miles	Wild	Scenic	Recreation
1.	From Forks to Turkey Creek	28	28	28	-	-
2.	Turkey Cr. to Forest Bndry. to Forest Bndry. Burros	10	5	-	-	5
3.	From Bird Area, Burros, to Forest Bndry., Burros	8	8	8	-	-
		46	41	36	0	5

Future Trends

The Gila National Forest presently has no classified Wild and Scenic Rivers. Those portions of the Gila River falling within the Gila Wilderness will remain wild. The portion of the Lower San Francisco River which qualifies for Wild River status could contribute an additional 17 miles of Wild classification should the need be identified in future years.

WILDLIFE AND FISH

The diversity of vegetation, climate, and geology provide habitat for a wide variety of wildlife and fish species. Elk herds are expanding in middle and high elevation areas of the Forest. Rocky Mountain bighorn sheep range from the mountains near Glenwood southeast to Turkey Creek.

Mule deer and whitetail deer interact with mountain lion populations throughout most of the forested zones. Both Merriam turkey and black bear are found in secluded woodland, oak, and coniferous zones. Javelina are distributed in the lower semi-desert and woodland habitats. Pronghorn antelope herds and prairie dog towns are found in portions of the open grasslands.

Hawks, owls, and golden eagles utilize virtually all habitat types on the Forest. Upland game birds include gambel quail, scaled quail, meadow quail, mourning dove and blue grouse. Robins, flickers, jays, ravens, woodpeckers, nuthatches, chickadees, sparrows, and bluebirds are but a few of the more common nongame birds. Both resident and migratory waterfowl utilize the main river systems, lakes, and wetland habitats, with primary concentrations occurring during the winter months. Fisheries include trout, bass and catfish along with several native fish populations. Numerous small mammals, reptiles, and amphibians are also present.

The Forest serves as a refuge for certain wildlife species that have been reduced within other parts of their historical range.

Threatened and Endangered Species

Endangered wildlife species present on the Forest include the Gila trout, which is the only trout native to the upper river systems; the peregrine falcon; and the bald eagle. These three species are protected under the Endangered Species Act. The prime objective of the 1978 Gila trout recovery plan is to stabilize and maintain the five native populations, re-establish five duplicate populations, and restore the Gila trout to a sport fishery. The objective of the 1977 Peregrine Falcon Recovery Plan is to increase the population in the Rocky Mountains and southwest to a minimum of 100 effective breeding pairs by 1995. The management plan for wintering bald eagles is keyed to monitoring populations, along with identifying and protecting winter range habitats.

Critical habitat has not been designated for the Gila trout, peregrine falcon, or bald eagle.

The spike dace (*Medeo fulgida*) and loach minnow (*Tiaroga cobitis*) are also proposed for Federal Protection. These species are found within segments of the Gila and San Francisco river systems. Another proposed species, the Chihuahuan chub (*Gila nigrescens*), is found adjacent to the Forest along lower portions of the Mimbres River.

A number of species are additionally classified as endangered within the State of New Mexico. State listed species present on the Forest include the black hawk, Gila woodpecker, Costa's hummingbird, McCown's longspur, grey vireo, Abert's towhee, Bell's vireo, montane vole, *costimundi*, Gila monster, narrowhead gartersnake, Sonoran mountain king snake, roundtail chub, Gila springs snail, and New Mexico hot springs snail. All of these species include special habitat management needs within the State of New Mexico.

Threatened, sensitive, and endangered plants are divided into three categories; nominated for Federal Protection, identified on the Regional Forester's sensitive plant list, and identified as endangered within New Mexico. Twenty-three species are found on the Forest. Those nominated for Federal Protection are: Allium gooddingii-Goodding's onion, Scrophularia macrantha-Mimbres figwort, Erigeron hessii-Hess's fleabane, Pediocactus pappacanthus-grame grass cactus, Talinum humile-Pinos Altos flame flower and Senecio quarens-Gilia groundsel. An additional plant species presently on the Regional Forester's sensitive plant list is Pteryxia davidsonii-Davidson's cliff carrot.

Species listed as endangered within New Mexico which occur or are likely to occur on the Forest include: Cypripedium calceolus var. pubescens-Golden Lady's Slipper, Epithelantha micromeris-Button Cactus, Erigeron hessii-Hess's Fleabane, Eriogonum densum-Woolly Buckwheat, Fritillaria atropurpurea-Checker-Lily, Habenaria dilatata var. dilatata-Bog Orchid, Hexalectris nitida-Crested Coralroot, Hexalectris spicata-Crested Coralroot, Lilium philadelphicum-Mountain Lily, Mammillaria viridiflora-Green-flowered fish-hook cactus, Mammillaria wrightii-Wright's Fish-hook cactus, Malaxis tenuis-Adder's mouth, Neolloydia intertextus-White-flowered Viscagata, Spiranthes parviflora-Lady Tresses, Spiranthes megacarpum-Lady Tresses, Talinum longipes-Long-stemmed Flame Flower. This listing will be updated should plants of less likely occurrence be verified on the Forest.

Indicator Species

Of the 450 vertebrate wildlife and fish species found on the Forest, 25 were chosen as management indicator species. The objective was to select species which would indicate successional stages of each vegetation type and serve as an indicator for detecting major habitat changes. Table 17 displays the species, the vegetation types and the successional stages for which each indicator species was selected. Table 18 depicts acres of key habitat for selected game and indicator species. This is limited to species for which estimation data is currently available. Table 19 displays refined 1980 population estimates for selected Game and T&E species on the Forest.

TABLE 17. Management Indicator Species/ Successional Stage/ Vegetation Type												
	Desert Plains		Mtn.	P/J	Shrub	Oak	Pond.	Mixed	Riparian			
Species	Shrub	Grassland	Grassland	Woodland	Woodland	Woodland	Pine	Conifer	Low Elev	Mid Elev	High Elev	Wet Meadow
ELK			M	{M}		M	M	M		{M}	{M}	{M}
MULE DEER	M-H			M	M-H	M	{M}	{M}		{M}	{M}	{M}
ANTELOPE		M	M									
ABERT SQUIRREL							H-M					
RED SQUIRREL								H				
ARIZONA GRAY SQUIRREL										H		
BLACKTAIL JACKRABBIT	L	{L}		L		L						
LONGTAIL VOLE							L	L				
MEXICAN VOLE											L	H
BEAVER									{M}	M	M	
TURKEY				{M}		{M}	H-M	M		{M}	{M}	{M}
BLUE GROUSE								H-M				
MEARNS QUAIL		H	H	H-M		{H}						
HORNED LARK		L	L									
PLAIN TITMOUSE				H	H							
HAIRY WOOD-PECKER							H	H				
SPOTTED OWL								H			H	
KILLDEER									L	L		L
BLACK HAWK									H	H		
MALLARD									{M}	{M}		M
YELLOW WARBLER									H	H		
HOODED ORIOLE									H			
COMMON FLICKER				H		H						
SONORAN/DESERT SUCKER												
RESIDENT TROUT									L	L	{L}	
										H	M-H	M-H

KEY: H = Primary High Seral Stage Indicator
M = Primary Moderate Seral Stage Indicator
L = Primary Low Seral Stage Indicator
(H) = Secondary High Seral Stage Indicator
(M) = Secondary Moderate Seral Stage Indicator
(L) = Secondary Low Seral Stage Indicator

TABLE 18. Acres of Key Habitat for Selected Game and Management Indicator Species

Species	Determination Criteria	Acres
Elk	Reproduction and/or winter range	696,151
Mule Deer	Reproduction and/or winter range	857,752
Whitetail Deer	Occupied Area	185,701
Antelope	Occupied Area	163,367
Big Horn Sheep	Occupied Area	160,032
Turkey	Summer Nesting and/or winter Range	781,855
Abert Squirrel	Occupied Area	561,033
Red Squirrel	Occupied Area	83,876
Arizona Gray Squirrel	Occupied Area	7,110
Mearns Quail	Occupied Area	13,586
Blue Grouse	Occupied Area	21,151
Prairie Dog	Selected Suitable Blackfooted Ferret Reintroduction Area	1,660
Spotted Owl	Occupied Area	42,075
Mallard	Nesting Area	1,571
Resident Trout	Occupied Area	12,237

TABLE 19. 1980 Population Estimates for Selected Game and Endangered Species on the Forest

Species	Population Level
Elk	5,787
Mule and Whitetail Deer	14,834
Turkey	10,730
Antelope	488
Big Horn Sheep	254
Bald Eagle	70 (Winter Range Period)
Peregrine Falcon	22 (Summer Range Period)
Gila Trout	7,280

Wildlife Recreation During 1980 recreation use associated with wildlife species on the Forest was as follows:

Big Game Hunting	75,877	Recreation visitor days
Small Game Hunting	17,318	Recreation visitor days
Non Consumptive Use	100,805	Recreation visitor days
Fishing	71,840	Recreation visitor days
Total	265,840	Recreation visitor days

Wildlife recreation use occurs yearlong on the Forest. The lowest recreation use period is during the winter months when activities involve trapping for fur bearers; hunting for waterfowl, big horn sheep or lion; and ice fishing. A surge in wildlife recreation use normally begins during the April/May period with the spring turkey hunts, trout fishing, and opening bear hunts. Recreation uses associated with fishing and nonconsumptive wildlife activities continue at elevated levels throughout the summer months. The fall months of September through November encompass the highest wildlife recreation use period in association with the elk, deer, turkey, and small game hunts.

The existing distribution of wildlife recreation use continues to pose concentration problems in certain areas and during certain periods. Recent cooperative efforts with the Department of Game and Fish have aided in addressing certain aspects of hunter concentrations.

A decrease in habitat diversity has occurred in certain areas. This has been especially true in portions of Wilderness areas where reduced fire occurrence interrupted the natural maintenance and creation of early successional stages.

In addition, a trend toward disproportionate levels of early successional stages has occurred in certain non-wilderness areas. Current management is addressing this, but has not significantly affected continuing trends in both wilderness and nonwilderness zones.

Exotic wildlife species are found on portions of the Forest. Invasion by birds such as sparrows and starlings has occurred, and several nonnative fish species are present. The Florida mountains, located south of the Forest boundary, have an expanding population of Persian ibex. A strong potential for invasion by this exotic species exists.

Current direction for wildlife and fish management includes: 1) coordination of wildlife and fish needs with other resource utilization activities; 2) direct habitat improvement work; 3) protection of threatened and endangered species; and 4) cooperative efforts with the New Mexico Department of Game and Fish and the United States Fish and Wildlife Service.

Future Trends

Levels of wildlife management under current direction only enable the Forest to meet segments of goals and objectives in the state comprehensive wildlife plan.

Demand for consumptive and nonconsumptive wildlife and fish associated recreation is expected to increase to 899,000 recreation visitor days (RVDs) by the fifth period. Accelerated efforts in habitat improvement, restoration of Threatened and Endangered species, and closer coordination with other resource and other wildlife management agencies have the potential of increasing the supply of wildlife and fish to 724,000 RVDs by the fifth period. The current direction alternative would provide opportunities for 243,000 RVDs in the fifth period.

RANGE

The goal of range management on the Forest is to provide forage for domestic livestock use under cost effective management systems without impairment of land productivity or other resource needs.

Since the creation of the National Forest System, significant progress has been made in improving the productivity of rangelands on the Gila National Forest. This progress has been especially evident in the past decade. In 1975 only 74 grazing allotments out of 152 (49%) were under satisfactory management. Because of Forest Service and permittee management activities, 96 allotments out of 141 (68%) were under satisfactory management by 1985. Of the full capacity range, 56 percent of the Desert shrub, 61 percent of the mixed conifer, 85 percent of the mountain grassland, 63 percent of the plains grassland, 67 percent of the ponderosa pine, 34 percent of the riparian and 69 percent of the woodlands vegetation types are in high or medium high condition. The trend is up on many of the areas in lower condition classes. Existing capacity and permitted use for the Forest are displayed in Table 20 in animal unit months (AUMs.)

TABLE 20. Grazing Capacity and Permitted Use

	Full Capacity Acres	Potential Capacity Acres	No Capacity Acres	Existing Capacity AUM's	Existing Permitted AUM's
Forestwide	2,308,393	28,658	1,005,557	315,078	383,744

NOTE: The Permitted animal unit month data is for 1980. The capacity data is the best available data from allotment analysis and management plans. Capacity data is an average of 15 years old. Data will be updated on individual allotments during plan implementation.

Even with improved management, improvement in range condition is very slow. Because of the droughty climate in many portions of the Forest, it may take 20 years or longer for range condition to improve one condition class after the activities that created poor condition are corrected.

Future Trend

Current management allows for slow progress in resolution of the remaining problem areas on the Forest. New improvements would often be offset by deterioration of older improvements. At some point in the future, deterioration would occur faster than replacement. Capacity is projected to decrease to 290,000 animal unit months (AUM). Continued improvements in range condition would result from reductions in permitted numbers. Permitted numbers would be equal to the declining capacity by the end of the second decade.

Opportunities exist for increasing the grazing capacity on the Forest, but these opportunities would not be realized under the current management direction. The Maximum Grazing Capacity Benchmark, with accelerated administration, improvements, and maintenance, indicated that the Forest has a potential to increase range capacity to 435,000 animal unit months. Based on the Forest's past experience with demand for permitted use, it is assumed that demand is sufficient to match even this level of capacity.

TIMBER AND FUELWOOD Timber Suitability

During the analysis of the management situation, data on all National Forest System lands within the planning area was reviewed. The Allowable Sale Quantity is determined primarily by the number of acres allocated to timber management. Those lands that met any one of the following criteria were identified as not suited for timber production (36 CFR; 219.3).

- (1) The land is not forest land as defined in 36 CFR; 219.3.
- (2) Technology is not available to ensure timber production from the land without irreversible resource damage to soils productivity, or watershed conditions.
- (3) There is not reasonable assurance that such lands can be adequately restocked as provided in 36 CFR; 219.37 (c) (3).
- (4) The land has been withdrawn from timber production by an Act of Congress, the Secretary of Agriculture, or Chief of the Forest Service.

Forest Service Manual 2412.1 describes the sequential steps that were followed in determining lands tentatively suitable for timber production. The first two steps in this process were very straight forward. They include definition of forest land and the definition of lands withdrawn from timber production. Lands not withdrawn that were forested past through these screens and were reviewed to determine if they were capable of producing industrial wood, if they were physically suitable, and if there was adequate response information. Much of the forested area classified as unsuitable on the Gila National Forest could have been put into any of these categories.

Forest Service Manual 2412.13 states that "lands that are not capable of producing crops of industrial wood are by definition to be classified as unsuitable". It goes on to state that "Species of trees which are not currently utilized.... constitute the primary criterion for assigning lands to this category".

Forest Service Manual 2412.14 states that "Forest lands physically unsuitable for timber production are lands where technology is not available to ensure timber production, without irreversible resource damage.... and lands where there is reasonable assurance that they can be adequately restocked within five years".

Forest Service Manual 2412.15 states that "Forest land shall be classified as unsuitable for timber production, if there is not adequate information available, based on current research and experience, to project responses to timber management practices".

During the Gila National Forest planning process 2,804,477 acres were inventoried as forested. Of these total acres, 772,263 acres were classified wilderness. Of the 2,034,941 acres outside classified wilderness, 237,353 acres were classified as not capable of producing crops of industrial woods. Stands put into this classification were primarily mixed ponderosa pine/pinyon/juniper stands on very low sites. An additional 215,397 acres were classified as

physically unsuitable. This acreage included stands that could not be logged without irreversible resource damage and stands where regeneration could not be assured. The portion of this category called unsuitable because of regeneration could also have been called unsuitable because of the lack of information available to project response to timber management. These are ponderosa pine stands growing in association with juniper or other species that indicate dry sites. Past experience planting these sites has resulted in consistent plantation failures. They do eventually regenerate naturally, but only when all conditions are perfect. Information is not available to ensure regeneration or to project response to timber management. The 1,147,104 acres of pinyon and juniper on the forest was classified as unsuitable because of inadequate information. This left 432,361 acres classified as tentatively suitable.

Classification was based on all information available including limited soils data, associated species, topographic maps, aerial photos, timber type maps, old timber sale data, silvicultural examination data, personnel experience, and professional judgement. Silvicultural examinations cover about half the area. They were used extensively to determine suitability. Table 21 displays the tentatively suitable land classification.

TABLE 21. Lands Capable, Available, and Tentatively Suitable for Timber Production

Classification	Acres
Total National Forest	3,342,890
Nonforested Land	538,413
Total forested land	2,804,477
Legislatively or administratively withdrawn	772,263
Not capable of producing crops of industrial wood	237,353
Pinyon-Juniper and inadequate information	1,147,104
Physically unsuitable for timber management	215,397
Tentatively suitable for timber production	432,361

Timber productivity classes for the 432,361 acres of tentatively suitable land on the Gila administrative unit are given in the following table. Similar data for unsuitable lands are not available.

Table 22 - Timber Productivity Classification

Potential Growth (Cubic Feet/ Acre/ Year)	Suitable Lands (Acres)
Less than 20	2,799
20-49	326,897
50-84	97,017
85-119	5,648
Greater than 119	0

Timber Management

Timber lands are managed under even-aged or uneven-aged systems. Under current management direction, the vast majority of lands are managed under the even-aged management system. The shelterwood method of regeneration is generally used to obtain natural establishment of new stands. If natural regeneration is not achieved, then artificial reforestation is used. Harvest activity throughout the Forest is bringing stands under management with an objective of obtaining a balance of age classes. It will require approximately 50 years to bring all stands under management.

The uneven-aged system of management is used to meet specific objectives for visual quality, wildlife habitat, etc.

Past production of sawtimber and fuelwood is displayed in Table 23.

TABLE 23. Past Sawtimber and Fuelwood Volumes Sold [in Thousands of Board Feet]		
Year	Sawtimber MBF	Fuelwood MBF
1971	51,401	1,932
1972	52,511	1,807
1973	37,940	2,410
1974	22,403	5,071
1975	15,302	5,582
1976	62,843	9,045
1977	30,093	9,679
1978	31,426	13,194
1979	22,200	17,508
1980	35,156	13,587
1981	35,000	9,181
1982	1,200	10,104
1983	58,700	12,486
1984	100	9,819
1985	9,700	8,672

Commercial timber harvesting techniques have been traditionally limited to tractor logging on slopes less than 40 percent. The Forest has sold only one sale requiring cable logging. The current cable logging program will provide a limited amount of vegetation diversity on the 40 percent and steeper slopes.

Timber stands on the Forest have not been converted to even aged and not all stands will be converted. However, as more stands are converted to even age, age class distribution is expected to improve and become more evenly distributed. This will happen as varying age classes are featured and as planned regeneration cuts are made.

Uneven aged methods, while useful in certain specific stands, have generally been ineffective in controlling dwarf mistletoe and often result in the conversion of mixed conifer site ponderosa pine stands to white fir, Douglas fir, or spruce.

Future Trends

Current direction is designed to maintain an even-flow sustained yield of wood products while improving stand conditions and increasing long-term yields. By the fifth period, stands which are now in large pole size material will have reached harvest size. Forest conditions will have improved and the benefits of current silvicultural investments will begin to be realized. The current direction alternative yields about 46 million board feet (MMBF) by the fifth period while the maximum potential supply is estimated to be 50 MMBF. The average volume sold over the last 10 to 15 years is approximately 30 MMBF. The average amount offered has been somewhat higher. The present allowable sale quantity (converted to board feet) for the Forest is approximately 54 MMBF.

The projected demand for timber is based on historic demand. As mentioned above, the past demand has resulted in an average 10 to 15 year volume sold of approximately 30 million board feet (MMBF). This 15 year period included both good and bad economic times for the Timber industry. Since a true price quantity demand projection could not be made, 30 MMBF has been projected as the demanded level. Changes in supply as a result of other Forest's land and resource management plans and as a result of changes in the management of nonfederal timber lands have been evaluated. No basis has been found to support a projection above or below this level. The demand projection will be reviewed when a new plan is prepared in 10 to 15 years.

Fuelwood

Quality dead fuelwood in accessible areas is rapidly being depleted. Some deadwood remains in the more remote areas of the Forest, but in those areas nearest urban centers, the deadwood is virtually gone. Most fuelwood gathering in the past has been limited to roaded areas on slopes less than 15-20 percent. Quality fuelwood is still available on steep slopes and in unroaded areas, but because of inaccessibility, fuelwood gathering is not practical. The result is an increased demand for green fuelwood for both personal use and resale.

Illegal cutting of fuelwood is an increasing law enforcement problem. The pinyon-juniper woodlands receive most of the impact. They contain the preferred species and access is generally easier. The most preferred species is alligator juniper. Pinyon is often left in cutting areas. Green fuelwood cutting is being limited on some districts now in order to prevent overcutting.

Future Trend

The demand for fuelwood is expected to increase. Demand will exceed supplies in the long-term. Growing concern over air pollution may eventually lead to ordinances which could affect the demand for fuelwood. The demand projection for fuelwood reaches 60 million board feet (MMBF) by period 5. The maximum potential supply defined is 17 MMBF. Current direction will provide only ten MMBF in the fifth period.

LAW ENFORCEMENT

Law enforcement problems increase as the number of Forest users increase. From April through September the population in and around the Forest increases as recreation use increases. Various hunting seasons scheduled for September through November also affect the number of Forest users.

The Forest is located in portions of four counties; (Catron, Grant, Hidalgo, and Sierra). The remaining land in the four counties is State, private, or other federally owned lands. One portion of the Forest is less than 50 miles from the Mexico border.

The Forest currently has cooperative agreements with Catron, Grant, and Sierra County Sheriff's Departments. They are financially assisted to provide additional service for the protection of users and property in connection with the use of National Forest System lands. Although it is recognized that this is an excellent cooperative program, the cooperative agreements only provide minimal periodic patrols along main Forest roads. The deputies do not have authority to enforce federal laws and regulations, and do not patrol any of the wilderness areas. Therefore, approximately 25 percent of the Forest has a very limited profile of law enforcement except that which is provided by Forest officers and Game Department officers. Forest officers are not authorized to enforce state and local laws. The Game Department Officers also assist in law enforcement; however, their patrols are limited outside of primary hunt periods. New Mexico state police assist in providing support when requested, but are normally operating near major vehicle travel routes.

Primary areas of criminal activity involving National Forest System lands include narcotics transportation by aircraft, marijuana growing, illegal aliens, and stolen vehicle activity and abandonment.

The above mentioned activities are all violations of state and/or federal laws. The Forest Service does not have direct enforcement authority.

The Forest has a large number of archeological sites. Disturbance of archeological sites for removal of Indian artifacts is increasing each year. The fact that Indian artifacts have a high commercial market value has resulted in a sophisticated trading system in the United States and Mexico. In some known instances this artifact traffic is tied to narcotics traffic. Protection with the current work force is not adequate to prevent theft of these artifacts.

Some Forest users illegally remove Forest commodities for profit. Unauthorized removal of green standing and dead and down fuelwood has risen dramatically during the past five years. Approximately 5000 cords of fuelwood are illegally removed each year. The number of illegally removed Christmas trees has also risen during the past five years.

Many other offenses occur on the Forest. These include theft of government property, vandalism, dumping of trash, livestock and occupancy trespasses, off-road vehicle use, fire, and recreation violations.

Issuing notices of violation for minor fire, recreation, and fuelwood violations occupy a large share of the law enforcement duties.

Continuing the trend of reduced cooperative law enforcement will result in a decrease in the protection to Forest users. Continuing the trend toward reducing Forest law enforcement will lead to deterioration of renewable and nonrenewable resources as well as damages to capital investments.

Future Trends

With the increasing population in New Mexico and the increased use of the Forest, there is also a corresponding increase in law violations. The need for enforcement on the Forest is expected to increase proportionately to the population growth. The Forest can potentially provide adequate enforcement through increased authority training, manpower, and equipment.

DIVERSITY

Diversity implies environmental variety--the kind, number, proportion, and distribution of plants and animals and the different associations. Forest management primarily affects the relative proportion and distribution of both plants and animals.

Ecological, social, or consumptive considerations give greater importance to some plant and animal species than to others. Species with extremely low populations, limited distributions, high aesthetic qualities, or high consumptive and recreation values commonly take precedence over others. Some plant and animal species, while not possessing the above characteristics, indicate the quantity and quality of habitat on the Forest and can reflect population levels and trends of other species. Certain plants and animals are tied to specific habitat types, while others are more tolerant. Those which have very specific requirements are generally emphasized in maintaining diversity. Existing tree species diversity is high with complex interactions between species. Major tree species present are highlighted in Chapter 3, Vegetation.

Riparian communities are usually defined by the presence of plants associated with surface water or high water tables. In terms of biological production, riparian areas may be the most important element in maintaining diversity, but occupy the smallest land area. While only 0.8 percent of the Forest supports riparian habitat, nearly one-third of the wildlife species and numerous plants find conditions suitable for all or part of their habitat needs. Therefore, riparian zones are subject to special management considerations. Activities in riparian areas are directed toward maintaining and/or improving these areas.

Progress has been made toward riparian recovery in higher elevations. However, lower riparian zones still exhibit reduced stand structure, species composition, and herbaceous growth.

Some plant communities exhibit late successional conditions. Evidence of this condition is easily recognized in old growth vegetation. As the area of natural old growth stands have been reduced, animal and plant species depending on these conditions have also been reduced.

Snags are a specific habitat element important to a wide variety of wildlife species. Wildfire, lightning strikes, insect and disease mortality, and natural mortality increase snag density. Fire suppression, as well as fuelwood cutting, may decrease the number of snags in the future unless this resource is managed.

Snag densities of two or three snags per acre represent the biological limit of most of the dependent species' ability to utilize snags and provide a baseline for snag management.

Snag densities below this level are common within historically harvested timber and fuelwood areas.

Other components of diversity include cover habitats, turkey roost habitats, squirrel nest habitats, openings in the forest canopy, and foraging areas. A mix of these diversity components, as well others previously discussed, has been addressed in a generalized manner under current management. Continuing a generalized approach to diversity includes the risk of missing ecological elements with specific requirements.

SOIL AND WATER

The Gila National Forest currently contains 28 administrative watersheds. Past resource use and activities have created unacceptable soil erosion and reduced soil productivity on an estimated 1,166,400 acres. Average annual soil loss ranges from one to 11 tons per acre on the 28 watersheds, resulting in a total annual soil loss on the Forest of 18,789,000 tons. Watershed condition is currently classified as unsatisfactory on ten out of the 28 watersheds on the Forest, resulting in a total of 930,800 acres of unsatisfactory watershed condition.

There are significant acreages of unstable soils on the Gila National Forest. The soils derived from the alluvium, Gila conglomerate, volcanic sediment, and rhyolite parent material are highly erodible. Soils may also be sensitive due to the soils position on the landscape [drainage bottoms, very steep slopes, etc] or because of a lack of effective ground cover. Unstable soils are also dependent on vegetative cover for their stability, and thus are very sensitive to management activities.

The Forest currently produces an estimated water yield of 337,860 acre-feet. Water use on existing developments on the Forest consume an estimated 2179.0 acre-feet of surface water. A majority of the water flows from the lower elevations and serves to recharge the Mimbres Valley, Rio Grande, Lower Rio Grande, and the Gila-San Francisco groundwater basins. Within the Forest, approximately 153,0 acre-feet of groundwater is drawn from these basins for domestic and livestock-wildlife uses.

The United States Supreme Court, in Arizona v. California, et al, 1964, decreed to New Mexico about 16,500 acre-feet of consumptive use from the Gila and San Francisco River stream system, exclusive of uses in the Virden Vally. In 1968, Congress authorized the Hooker Dam and Reservoir or suitable alternative as a unit of the Central Arizona Project and authorized the Secretary of the Interior to contract with water users in New Mexico in amounts that will permit consumptive use of water in New Mexico not to exceed an annual average in any period of ten consecutive years of 18,000 acre-feet including reservoir evaporation over and above the consumptive uses provided for by the 1964 decree United States Supreme Court. The Congress further authorized an additional consumptive use of not to exceed an annual average in any period of ten consecutive years of 30,000 acre-feet including reservoir evaporation if works capable of augmenting the water supply of the Colorado River have been completed and water sufficiently in excess of 2.8 million acre-feet per annum is available from the mainstream of the Colorado River for consumptive use in Arizona to provide for the additional 30,000 acre-feet of use in New Mexico [Public Law 90-537]. The Bureau of Reclamation is conducting its Upper Gila Water Supply Study to determine the most feasible measure[s] to make available to New Mexico water users 18,000 acre-feet of consumptive use authorized by Public Law 90-537.

The Gila-San Francisco basin is fully appropriated and since the "Mimbres Decision" by the U.S. Supreme Court in 1978, the Gila National Forest has been unable to establish a legal right to past livestock, wildlife, aesthetic and recreational water uses on the Forest. This results in approximately 2,770 water developments which are not presently recognized by the State of New Mexico as legal water rights. The State of New Mexico does not recognize water uses other than those which preserve the timber on the Forest or secure favorable conditions of water flow. Because this decision is based upon "dictum" the Gila National Forest will continue to manage our existing livestock, wildlife, aesthetic and recreational water uses. New developments will be constructed only if valid existing water rights can be transferred or if consumptive use of the nonrecognized water uses is not increased over the watershed.

Water rights on the Mimbres River (six percent of the Forest) and the Rio Grande River (thirteen percent) are fully appropriated. Insignificant new water uses are allowed under the current administrative processes. Water rights on the Little Colorado River (7 percent of the Forest) can be appropriated through the State application procedure.

Runoff from the Gila National Forest meets the State water quality standards approximately 90 percent of the time. Violations of State standards usually occur during periods of high flows in which sediment is the major pollutant. This nonpoint source pollution generally occurs during summer months during high intensity thunderstorms. Numerous unstable channels throughout the Forest add to the sedimentation problem.

Lakes on the Forest, such as Snow Lake and Quemado Lake, are susceptible to massive build ups of blue green algae during the summer months. This is jeopardizing both the fisheries and recreational resources. There is a concern for the possible effects of these algae toxins on the wilderness streams below Snow Lake.

There are numerous areas within the Gila National Forest which have a potential to endanger life and facilities due to flooding. Areas such as the Catwalk picnic area are managed to reduce this danger. This area is restricted to picnicking only. The major flood-prone areas are Whitewater Creek, the main stems of the Gila and San Francisco Rivers, Mogollon Creek, Sapillo Creek, Percha Creek, and the Mimbres River.

Future Trends

The demand for more water developments in the Forest will continue to increase as the public demands more commodities and amenities. Surface and ground water rights necessary to secure water for these uses will be difficult to appropriate. It may be necessary to purchase water rights or transfer water rights currently held by the Forest Service to obtain larger quantities of water.

Trends assume that overall demand for water will continue to exceed supply, and that watershed conditions, soil productivity, and water quality will improve.

RESEARCH NATURAL AREAS

Research Natural Areas (RNAs) are set aside to provide and protect natural diversity in all its forms. The areas typify important Forest, shrubland, and grassland ecosystems having special or unique characteristics of scientific interest or importance. Research natural areas are established for nonmanipulative research, observation, and study.

The Gila National Forest currently has one designated research natural area and four candidate research natural areas. The Gila River RNA is located in analysis area 7A and features 125 acres of pinyon-juniper woodland, 52 acres of riparian hardwood, and 225 acres of desert shrub for total size of 402 acres.

Potential or candidate RNAs are: Turkey Creek in analysis area 8B is 1,335 acres and features riparian hardwood as a major ecosystem; Rabbit Trap in analysis area 7A is 297 acres and features scrub grassland; Largo Mesa in analysis area 9A is 300 acres and features classic pinyon-juniper woodland; and Agua Fria Mountain in analysis area 9B is 350 acres and features mountain grassland as a major ecosystem.

RIPARIAN

These small zones along waterways make up approximately 0.8 percent of the Forest. In addition to being a vital wildlife habitat and diversity component, riparian areas attract recreation use and concentrations of livestock. Roads and trails are many times located within riparian zones because they usually provide easier travel routes.

Because the varied uses are not compatible, conflicts are common. Most recreationists do not like the noise and smell of concentrated livestock. Sensitive wildlife prefer riparian areas isolated from human use. Livestock sometimes compete with wildlife for forage and over time can alter habitat structure. Conflicting uses within sensitive riparian zones result in damage to vegetation, compacted soils, erosion, and stream sedimentation.

Current management has resulted in slow but consistent improvement in higher elevation riparian zones; however, conflicts still persist in many lower elevation riparian areas.

Future Trends

Recreation use in riparian areas is expected to grow along with population growth. Conflicting uses; i.e., livestock grazing vs. recreation use vs. wildlife habitat, are expected to intensify in the future.

The potential exists on the Forest to maintain and enhance riparian habitats and at the same time substantially reduce conflicts between uses.

CULTURAL RESOURCE

The lands in and surrounding the Forest have figured prominently in the prehistory and history of New Mexico. These lands contain archeological sites that are important to understanding the prehistory of the area. Examples include some of the earliest occupation in this hemisphere, land use patterns of both foraging and agricultural peoples, the development of agriculture, long-term changes in climate and other aspects of the environment, the formation of large pueblos and complex societies, and the abandonment of many settled areas.

The history of this region is characterized by the complex relationships between the native Apaches and Navahos and the Europeans. The historic cultural resources of these lands contain information on topics of importance such as the Mexican period land use, pacification of hostile native peoples, and modern industrial use of the Forest. There are two existing overviews. One covers the north half of the Forest, and the other covers the south half.

The Forest currently has records on 1,805 archaeological and historic sites. One site on Forest land is currently listed in the National Register of Historic Places, the Burros site #2 on the Silver City District. The Mogollon Townsite on the Glenwood District has been nominated to the National Register. Many potentially eligible properties remain to be nominated.

The cultural resources program focuses on protection, quality review, allocation, and interpretation. Protection includes: 1) survey of project impact areas, as well as formulation and implementation of plans to avoid or mitigate cultural resource damage in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation; 2) prevention of vandalism and pothunting; and 3) protection against natural deterioration. Quality review involves conducting archeological work on the Forest to ensure field methods, evaluations, and reports are adequate for all categories of cultural resources. Allocation is the process of assigning cultural resources to management categories based on professional evaluation of the best use. This activity includes evaluation regarding eligibility for the National Register of Historic Places. Interpretation involves educating professional and public users of the resource about existing and potential knowledge that has been or may be derived from cultural sites and areas.

Future Trends

Projections of the total number of sites that may exist on the Forest range from 40,000 to 65,000.

The cultural resources on the Forest are finite and nonrenewable. Over the past several years there have been increases in the number of activities that may deplete these resources. The rate at which these resources will be depleted in the future will vary with the state of the economy, the level of Forest funding, the market for timber and minerals, and academic research interest. The cultural resources program for the Forest is designed to ensure that future use occurs wisely and in a controlled manner.

All sites on or eligible for nomination to the National Register of Historic Places will be monitored and protected. Other sites are protected to the extent feasible for resource management activities by avoidance or mitigating measures. Clearance surveys will continue for all ground disturbing resource management activities.

INSECT AND DISEASE

Forest pests are best managed using the concepts of integrated forest protection (IFP)—a systematic decision-making process and resultant actions developed after considering the pest-host systems and resource management objectives. Management may include "no action" to a combination of silvicultural, biological, chemical, and other preventive and remedial measures. Silvicultural treatment has been the only method used thus far for Forest insects.

Dwarf mistletoes are found throughout the Forest. The degree of infection varies widely from mistletoe free to nearly 100 percent infection. Mistletoes reduce the growth and vigor of heavily infected trees and increase the susceptibility of trees to attack by insects and other diseases. It is by far the most damaging agent in the Forest. Dwarf mistletoe control consists of the removal of infected overstory trees and the removal of infected understory trees during intermediate cuts. Cutting infested trees is the only control method. Dwarf mistletoe control is a primary objective in all timber harvests. Prescriptions for dwarf mistletoe control are written for individual stands. Past harvesting and thinning activities have reduced the infection in some timber stands to a manageable level, while other stands will require total removal and regeneration to bring dwarf mistletoe under control.

Root rots have been found in some plantations and have a potential for serious damage. Damage so far has not been sufficient to warrant action.

Western spruce budworm has caused defoliation of mixed conifer stands in the Bearwallow Ridge and Hail Canyon areas of the Reserve District. The infestations are still present but have subsided during the past year. Action so far has only included monitoring and silvicultural treatment in areas where timber sales have been made. Management emphasis is toward reducing future stand susceptibility and vulnerability by improving management, increasing general health of timber stands, and favoring no host species. Biological and chemical treatments still remain a viable option where the degree of damage warrants.

Ips bark beetle has caused tree mortality in ponderosa pine stands. Mortality in isolated trees or small groups is common. No severe outbreaks have occurred in several years but can occur when trees are stressed for lack of moisture and sufficient green slash is available. They can be controlled by reducing green slash available during the breeding season. This is done by controlling the timing and spatial separation of slash creating activities.

Tip moth is a continuing problem in plantations, reducing growth for several years in young trees until they grow out of the susceptible stage. No feasible treatment is known at this time.

There have been outbreaks of several other Forest insects including alder leaf beetle, scarab beetles, tent caterpillars, and spruce bark beetles. These have all subsided in a relatively short time with no significant damage.

Grasshoppers continue to be a problem on rangelands and cause significant economic damage. Direct suppression with chemical sprays has been performed by the Agricultural Plant Health Inspection Service. This was a cooperative effort with the New Mexico Department of Agriculture and private land owners.

Future Trends

Conditions favoring western spruce budworm are not expected to decrease significantly in the near future, so outbreaks of this insect are likely. Ips beetle management is far enough advanced so that no problems are expected from this insect unless severe drought occurs. Other insects can be expected to increase temporarily, but not to damaging levels. An aggressive monitoring program, appropriate preventive silvicultural treatments, and direct suppressions programs when necessary should reduce potential damage to an acceptable level.

Through the application of proper silvicultural prescription the incidence of dwarf mistletoe will be greatly reduced.

There is the potential for future grasshopper epidemics. These will probably require periodic suppression with the use of insecticides.

MINERALS

Mineral development is highly important for the economic well-being of the country and is of strategic importance for defense purposes. The Forest has the potential of supplying significant strategic minerals; however, removal of minerals, energy resources, and common variety materials often impacts the

natural environment and can result in conflicts with other resources, uses, and activities. The full potential regarding the Forest is not known but is estimated from information provided by the U.S. Geological Survey and the New Mexico Bureau of Mines and Mineral Resources.

Table 24 displays acreages of probable occurrence by potential classes. The ratings express a range from known mineralization and expected development to unknown mineralization with no expected exploration or development. Acres of locatable and leaseable minerals overlay some areas which duplicate acreages in some categories.

TABLE 24. Acres of Probable Mineral Occurrence

Mineral Potential Rating	Leaseable Minerals	Locatable Minerals
Demonstrated Favorable Production	0	35,000
Demonstrated Favorable Development	0	10,000
Demonstrated Favorable Exploration	0	25,000
Demonstrated Favorable Prospecting	0	1,000
Demonstrated Favorable Activity	0	10,000
Theoretically Favorable Prospecting	634,000	42,000
Theoretically Favorable Exploration	0	75,000
Insufficient Information for Predictions	2,766,000	3,202,000

Under current direction, the Forest takes action on operating plans for locatable minerals. Lease applications for leaseable minerals are processed in a timely manner. Common variety material permits are issued and administered in accordance with approved plans. All operating plans, leases, and permits are issued and administered subject to current Federal regulations. Mineral validity contests are undertaken where detrimental surface disturbance is possible or is occurring and where mining claims are suspected of being invalid.

There is presently 28,600 acres of mineral withdrawals put into effect by request of the Forest. Other Federal agencies also requested withdrawals (ie. power site reserves, power site classification, water power; San Carlos Irrigation Project, etc.) totaling 78,700 acres. The Forest can only recommend to the Bureau of Land Management, U.S. Department of the Interior, revocation or retention of the withdrawals the Forest Service requested. Other agency withdrawals will be studied and recommendations made to the Bureau of Land Management for revocation or retention by the agency that requested the withdrawal.

Prospecting, exploration, and mining of locatable minerals are accomplished under operating plans which insure surface resources are protected to the extent possible and adverse impacts are mitigated. The Forest receives and processes between 150 and 200 permits, notices of intent or operating plans yearly. Leaseable mineral requests vary from ten to 20 annually. Market conditions significantly affect prospecting and exploration activities. As mineral prices rise increased numbers of permits, operating plans, notices of intent and lease requests can be expected. As mineral prices fall the reverse is true.

Four active mines on reserved National Forest lands are either in production or in advanced development stages for production. Table 25 lists these active mines.

TABLE 25. Existing Active Mines					
Township	Range	Section	Type	Mineral	Land Status
17S	12W	12	Open Pit	Limestone	Forest
16S	13W	30	Underground	Copper/Zinc	Forest/Private
10S	19W	33	Tailings Recovery	Gold & Silver	Forest/Private
9S	9W	27	Underground	Silver	Forest/Private

The mines listed in Table 25 may be patented and leave federal ownership; the mine or claim owners will determine when or if this will occur. If title passes, all property rights (i.e. surface and subsurface) will be conveyed.

Table 26 displays acres and the location of lands with mineral rights owned by private individuals or corporations.

TABLE 26. Forest Lands With Mineral Rights Owned by Private Individuals			
Township	Range	Section	Acreage
1S	15W	19	625.60
1S	16W	19	202.77
1S	16W	30	170.50
1S	16W	31	160.93
2S	16W	10	40.00
2S	16W	14	160.00
2S	16W	15	160.00
2S	16W	25	80.00
2S	16W	26	40.00
2S	16W	32	80.00
2S	16W	35	80.00
3S	16W	5	39.37
3S	16W	24	40.00
3S	17W	11	40.00
10S	9W	5	13.50
10S	9W	6	35.20
10S	12W	10	40.00
10S	12W	15	40.00
10S	12W	29	160.00
11S	12W	5	40.00
11S	12W	6	84.32
12S	13W	10	30.00
12S	13W	11	10.00
12S	13W	14	37.50
12S	13W	15	90.00
12S	13W	22	165.00
13S	10W	11	157.00
13S	10W	12	494.76
13S	13W	2	159.14
15S	12W	6	70.00
17S	13W	35	40.65
19S	15W	33	40.00
TOTAL			3626.24

In 1978, an environmental impact statement was prepared to determine whether or not to lease the San Francisco and Gila Hot Springs Known Geothermal Resource Areas and adjacent lands. The final decision restricted areas available for leasing to a small area of the San Francisco Hot Springs Known Geothermal Resource Area and lands west of the community of Glenwood, New Mexico. The area available for leasing coupled with lack of interest may cause the U.S. Geologic Survey to withdraw the two classifications.

Future Trends

Demand for oil and gas leases are expected to continue in the Quemado-Beaverhead area, along with geophysical prospecting activities. Exploratory drilling can be expected during next 10 to 15 years. No geothermal interest in leasing is expected on National Forest lands.

Demand for locatable minerals will probably be in and around the old mine districts. Intensive drilling programs will be conducted to define the ore bodies. Once identified, patent to the surface and subsurface estate will be sought. The Pinos Altos Exxon discovery will be mined. Approximately 400 acres have been patented. Promotional mining efforts will continue to fluctuate with the minerals market. Promotional ventures will have the most potential for adverse effects to National Forest surface resources.

LANDS AND SPECIAL USES Land Acquisition

To improve management and administration of the National Forest, certain private lands within or adjacent to the boundary of the Forest have been classified as desirable for acquisition. Because local and physical conditions may change during the life of this plan, the lands classified in this plan and others that may be considered, will meet one or more of the following criteria:

- Lands within designated wildernesses.

- Lands that contain vital threatened and endangered species habitat, or vital wildlife habitat (i.e. calving areas).

- Lands needed for developed and dispersed recreation.

- Wet lands, riparian areas, and other water oriented lands.

- Lands that contain unique, natural, or cultural values.

- Lands that will improve public land management, meet specific administrative needs, or benefit other National Forest programs.

- Lands that provide needed access, or protect National Forest System lands from fire, or trespass or prevent damage to public land resources.

- Lands that need rehabilitation or stabilization to restore their productivity.

- Lands that are needed to block up National Forest System land ownership or meet research needs.

- Lands that are needed to meet programs prescribed or endorsed by acts, or reports of Congress, or the Department of Agriculture.

- Acquire inholdings that contain needed rights-of-way and will contribute to the Forest Resource Management Base.

The acquisition program will be achieved through purchase, exchange, and donation authorities. The Purchase Program centers around the Land and Water Conservation Fund Act which designates lands within the following categories, and are eligible for acquisition with Land and Water Conservation Fund Act funds.

Congressionally designated areas.

- Wilderness

- Threatened and endangered species habitat.

- Recreation acquisition composites and inholdings.

The basic goals of the composite program is to provide:

Lands needed for construction of public recreation facilities.

Lands needed for dispersed recreation and open space.

Protection of public recreation resources.

Prevention of private usurpation of public resources and facilities on nearby public land.

Table 27 shows the approved and proposed Land and Water Conservation Fund Act composites:

TABLE 27. APPROVED AND PROPOSED RECREATION ACQUISITION COMPOSITES 1/

Composites	Date Approved	Acres Approved as desirable for Acquisition	Net Acres Remaining	1980 Est. Cost of Lands
Mimbres	12/22/78	1,416	1,416	\$1,692,000
Upper Gila River	01/08/81	1,151	1,035	1,684,000
Wall Lake	Proposed 2/	1,160	1,160	2,900,000

1. Essentially all of the lands identified for acquisition with Land and Water Conservation Fund Act funds are also eligible for acquisition by exchange or donations, and will be acquired by these authorities when the opportunity arises and when appropriate.

2. This recreation acquisition composite has been field reviewed with personnel of the U.S. Department of the Interior.

The Donation authorities are applicable for any of the lands that meet the acquisition criteria.

The land exchange program operates under several authorities and is the major land adjustment program that can be employed to acquire essentially all of the lands that meet the acquisition criteria. The lands offered by the United States in a land exchange are tentatively classified as base-in exchange. Currently, the National Forest contains 9,800 acres that have been classified as base-in exchange. Because local and physical conditions may change during the life of this plan, those lands classified in this plan and any other that may be considered will generally meet one or more of the following criteria:

Lands needed to meet the needs of expanding communities.

Isolated tracts or scattered parcels that cannot be efficiently managed.

Provide consolidation of the National Forest System lands

To improve management, benefit specific resources, or increase management efficiency.

To meet overriding public needs.

Table 28 List acres of private lands desirable for acquisition and federal lands available for disposal.

TABLE 28. Acres of Private Lands Desirable for Acquisition

County	Acquisition Acres	Disposal Acres
Carton County	134,400	6,700
Grant County	2,200	800
Sierra County	16,000	2,100
Hidalgo County	0	0

Future Trends

Forest priorities for acquisition of lands are: 1) Lands within wilderness areas and/or within approved Recreation Composites; 2) Lands which support habitat for T&E wildlife species; 3) Lands which demonstrate high timber values; and 4) Lands which will resolve needed rights-of-way cases. Acquisition priority will be given to private lands in wilderness or private lands supporting habitat for threatened and endangered wildlife species during the first decade.

Special Uses

The Forest manages the numbers and kinds of special use permits displayed in Table 29.

TABLE 29. Forest Number and Type of Special Use Permits

Kind of Case	Total Cases	Total Uses	Total Miles R/W Length	Total Acres Permitted Area
100 Recreation Uses	196	196	4.2	226.2
200 Agriculture Uses	41	43	.1	1,467.8
300 Community Uses	12	12	.0	516.5
400 Industrial Uses	68	69	3.0	320.0
500 Public Information Uses	1	1	.0	.1
600 Research, Study, and Training Uses	78	78	.0	4,732.9
700 Transportation Uses	87	97	459.6	4,313.7
800 Utilities & Com.	79	83	750.7	4,621.0
900 Water Uses	65	69	34.1	667.7
Total	627	648	1,251.7	16,865.9

Recreation, industrial, community, transportation, and utilities and communications uses demands have been increasing steadily during the 1960s and 1970s. Demands for these uses are expected to remain strong in the future and to parallel the growth of adjacent metropolitan areas of El Paso, Texas; Albuquerque, N.M.; Tucson and Phoenix, Arizona. Recreational special uses associated with outfitter guides are expected to show a dramatic increase during the first planning period. Presently outfitter guide use accounts for 25 to 30 percent of the total wilderness use. There are five special use summer homes in the Indian Creek area (Management Area 4A). These homes are presently not in conflict with other resource uses.

Future Trends

Special use inspections and permit administration are not meeting established standards. Funding and manpower constraints have forced what time and funds are available to be devoted to special uses that present high hazards to National Forest surface resources of public safety (i.e. power lines, resorts, boat rentals, etc.).

MAJOR UTILITY CORRIDORS

The only major power transmission corridor present is the corridor for the three Tucson Electric Company 345 circuits that parallels the Forest's western boundary. This corridor is fully utilized by the Tucson Electric Company's existing transmission lines.

Future Trends

The Western Regional Corridor Study for the State of New Mexico did not identify any new corridor requirements during the time period 1980-1990. However, an Arizona-New Mexico area bulk transmission corridor (i.e. railroad) was identified as a potential corridor to be required between 1990 to 2020. Future plan updates will address this issue as needed.

El Paso Electric Company has submitted an application to the Bureau of Land Management for a single circuit 345 KV transmission line from Red Hill, New Mexico. The environmental analysis for this project has identified several alternative routes across the Forest. The resulting impacts and the potential need to amend the Forest Plan will be evaluated in the environmental impact statement being prepared by the Bureau of Land Management.

Electronic Sites

Existing electronic sites are listed in Table 30.

TABLE 30. Gila National Forest Electronic Sites

Site No.	Electronic Site	Designated Electronic Site	Single Purpose Electronic Site	Number of Users	Commercial Power	Road Access
1	Continental Divide		0	1	Yes	Yes
2	Jack's Peak	0		18	Yes	Yes
3	Black Peak	0		2	No	No
4	Copperas Hill	0		2	Yes	No
5	Brushy Mountain	0		2	Yes	Yes
6	Glenwood Brushy	0		3	Yes	Yes
7	Apache Mountain		0	1	No	No
8	Frisco Divide	0		3	Yes	Yes
9	Fox Mountain	0		3	Yes	Yes
10	Mangus Mountain	0		1	Yes	Yes
11	Luna C.O.		0	1	Yes	Yes
12	Luna Passive		0	1	No	Yes
13	Emory Pass		0	1	No	Yes
14	St. Cloud		0	1	Yes	Yes
15	Boundary		0	1	Yes	Yes
16	Forks	0		1	Yes	Yes
17	Signal Peak		0	1	No	Yes
18	Mimbres Passive		0	1	No	Yes

Future Trends

These sites (public and single user sites) should meet future demands for electronic site users. No additional new site designations are anticipated.

PROTECTION
Air

The part of the Gila Wilderness Area in existence in 1977 is the only class I area on the Forest.

Visual impairment is suspected to occur within the class I area to some degree. In addition to the smelter impacts, there are numerous natural and man-caused sources which contribute to visual impairment, especially when atmospheric conditions are stable. These are classified essentially as short-term and of insignificant blotic impact. Wildfires, the majority of which are caused by natural ignitions, and prescribed burning present a major short-term impairment. Particulate emissions from wildfires have averaged 5.35 billion grams per year for the last period. Prescribed fire particulate emissions have also averaged 15.97 billion grams per year for the last period. The majority of impacts originate outside the class I area. Most burning is in association with timber management practices and/or fire protection.

Fire

Fire management on the Gila National Forest is designed to provide a cost-effective program responding to land and resource goals. This program includes wildfire prevention, presuppression, suppression, fuel treatment, and prescribed fire activities. The present policy of the Forest is to suppress wildfires in a timely manner with appropriate forces, based upon established fire management direction and cost efficiency.

Generally, the Forest is removing all fuels within preattack fuelbreaks, adjacent to private property, adjacent to improvements, and within areas having a visual quality objective of retention. In other situations, the Forest is attempting to treat fuels on an area basis to achieve medium rate of spread and resistance to control (700 BTU/ft./sec). The Forest stresses utilization rather than disposal wherever possible. Costs of treatments are evaluated against values protected. Initial attack fire crews are used whenever possible to reduce excessive fuel loading.

The state of New Mexico Environmental Improvement Division is the authorizing agency in all air quality related issues. All prescribed burning must be approved by the state. Permission or refusal prior to, or during, active burning periods falls within State authority. The utilization of fire as a management tool has steadily increased and is expected to continue to increase.

Future Trends

With a greater emphasis on the natural role of fire, in addition to the intents of the Forest to return fuel loading to more natural levels, it is anticipated that utilization of prescribed burning will increase. Better understanding and improved vegetative control techniques will lead to increased demand for the application of fire as a means for vegetative manipulation.

Class I areas could well be emission sources as prescribed natural fire and planned ignitions are implemented. However, it is not anticipated that emission concentrations would greatly exceed present levels. No new sources of pollution or expansion of existing sources (i.e. smelters, industrial, etc.) is anticipated. Air quality related values would remain essentially unchanged.

Through the 1970s, the Forest had an average of 379 lightning-caused fires and 24 person-caused fires annually. The forest average annual acreage burned during this same period was 3,719 acres for lightning and 415 acres for person-caused fires. Records for the 1970-1979 period indicate that 96 percent of the fires on the Forest occur between the beginning of May and the end of September, a time when the fire hazard is generally at its peak.

Fire occurrence, acreage burned, and resource values lost may rise if budget reductions continue and public use increases. The increase of person-caused fires will not be significant until occurrence reaches a level where multiple fire starts become common. At that point, frequent escaped fires can be expected.

The natural fuel build-up on the Forest is significant where no timber management activities are taking place. The most significant change expected is the result of incomplete disposal of timber activity residues. With each successive entry the fuel loading level becomes higher. There could, however, be a decline in wildfire hazards with the increased uses of fuelwood, prescribed fire, and an increase in fuel treatment in timber management areas.

FACILITIES Transportation System

There are 4,714 miles of arterial collector, local, and travelway system roads on the Forest. In addition, there are 352 miles of state and federal highways within the National Forest and 200 miles in proximity. Arterial and collector roads comprise 14 percent of the Forest roads, 28 percent are locals, and 58 percent are travelways. Additional travelways are being developed each year as a result of fuelwood gathering, hunting, and off-road vehicle use. Approximately 30 percent of the existing maintenance level 3 and 4 roads mileage is in need of reconstruction to meet current use standards and to prevent resource damage. Need for reconstruction of existing roads and substandard maintenance has resulted in a deteriorating road system that does not meet management, public, and industrial use needs.

Recent changes in 23 CFR 660, which govern designation of Forest highways, has eliminated the present system and mandated that Federal Highway Administration, States, and Forests designate a new system. Currently, 68.5 miles of the Alma Reserve road has been designated as Forest Highway and 31.5 of the Beaverhead-Winston road has been nominated.

Table 31 displays recent historical Forest Service road construction/reconstruction

TABLE 31. Historical Road Construction/Reconstruction-Miles

Year	Construction	Reconstruction	Total
1979	10.0	62.7	72.7
1980	61.7	83.0	144.7
1981	40.8	69.4	110.2
1982	0.0	0.8	0.8
1983	27.2	92.4	119.6
1984	14.8	56.1	70.9
1985 1/	73.0	111.7	184.7

1/ Based on tentative funding and target allocations.

Trails	There are 1,441 miles of system trails within the Forest. Substandard trails account for 1183 miles of the system. These trails are not maintained to their prescribed maintenance level. Recent historical records indicate that from 1979 through 1983, little trail reconstruction or construction was done on the Forest. In 1984, 9.0 miles of trails were reconstructed. Twelve miles are projected for reconstruction in 1985.
Administrative Facilities	Many buildings and other structures have been constructed over the years to facilitate management and administration of the Forest. Currently there are 13 lookouts; twelve offices; 50 storage buildings and shops; 55 water, sewage and power systems; 23 family dwellings; 39 crew quarters; 11 barns; nine trailer parks and wash houses; 18 electronic sites, six air fields; and 12 heliports.
Future Trends	<p>Based upon recent trends, traffic volumes related to Forest visitor use will continue to increase. Arterial and collector systems will carry the bulk of this volume, but there will also be increased use of local roads for hunting and dispersed recreation. As use continues to increase, demand for better arterial/collector systems will also increase. Additional roads will be needed to accommodate the timber program. Public pressure for better road management of the local road systems will continue with emphasis on reducing open road densities and road costs.</p> <p>With increased use of the Forest trail system, public pressure for better trails and trail maintenance will also increase. If current management direction continues, most of the trail system will continue to receive substandard maintenance and will eventually provide marginal access to the Forest for management and public use.</p> <p>Many of the Forest Administrative facilities will have to be replaced by the fifth decade. Presently, 56 of the structures are pre-1940 vintage. Obsolescence will make many facilities uneconomical to maintain. Replacement of the facilities with new structures will provide the Forest with the facilities necessary to administer the National Forest.</p>
Liquid Waste	<p>Liquid waste is generated primarily at recreation facilities and administrative sites.</p> <p>At present all administrative sites except the Willow Creek Administrative Site have State approved discharge treatment facilities. These systems incorporate the use of septic "holding" tanks which are pumped on frequencies varying from 3 to 5 years and hauled to city treatment plants off Forest. The Willow Creek site is not approved but with light use, no off site pollution has been observed.</p> <p>Recreation systems consist primarily of holding tanks. A few subsurface liquid disposal systems are used. Approximately half of the holding tanks on inventory do not meet state standards. The holding tanks are emptied and disposed of in the same fashion as the septic systems.</p>
Future Trends	Liquid waste from administrative sites is not expected to increase significantly in the future. With proper maintenance, existing facilities should continue to be adequate. Recreational contribution to liquid waste are expected to increase proportionally with the increased recreational use.
Solid Waste	Solid waste is generated from administrative facilities and recreation facilities. At present, Forest waste is hauled to state approved sanitary landfills. Five of the landfills are public-commercial facilities. The sixth landfill is operated exclusively for Forest use and is on the Forest. Of the five public landfills, two are located on Forest lands and are administered by county governments through special use permit.
Future Trends	Solid waste generated on the Forest is expected to increase proportionally to the increase in recreation. It is anticipated that in the next 5 to 10 years, the landfills on the Forest will be full. Extended site and operation plans on private lands will have to be sought for waste disposal.

Rights-of-Way

Rights-of-way will be needed to assure public access and permit management of resources. In some cases private landowners both within and outside the Forest boundaries are blocking access.

Future Trends

It is anticipated that the Forest needs to obtain 26 miles of rights-of-way for trails and 155 miles of rights-of-way for roads. The failure to obtain these rights-of-way will result in a continued loss of access to the National Forest. Management practices and public use will be reduced and/or restricted.

LAND LINE LOCATION

The interspersation of private lands within the Forest boundary as well as the development of private lands, both within and adjacent to the boundaries, will result in increased occupancy trespass. Land line boundaries will need to be located and posted to identify and prevent trespass and protect resources.

Table 32 provides historic information regarding miles of property boundary surveyed and posted.

TABLE 32. Land Line Location Program - Miles	
Year	Land Line Location
1979	22.8
1980	34.3
1981	21.9
1982	7.7
1983	16.0
1984	22.0

Future Trends

There are approximately 1,440 miles of property boundary that needs to be surveyed and posted to standards. At a projected rate of 178 miles per decade, it can be expected that occupancy trespass will continue to occur and may increase as private land is developed.

4. Environmental Consequences

OVERVIEW

Environmental consequences are the effects and impacts of implementing an alternative on the physical, biological, social, and economic environment. This chapter displays outputs by alternative and describes the direct and indirect environmental consequences that result from alternatives considered in detail. Direct environmental effects are defined as those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity but are significant in the foreseeable future.

Analysis and evaluation of the consequences provide the analytic basis for comparison of alternatives. Alternatives considered in detail in developing the Gila National Forest Land and Resource Management Plan (Plan) are described in Chapter 2.

Environmental consequences of the alternatives result from application of various combinations of management prescriptions. In each alternative, the mix of prescriptions produces different levels of resource outputs, including recreation, wildlife habitat, timber and fuelwood production, water yield, watershed condition, and grazing capacity. The interaction between the level of outputs and location of their production and timing results in environmental consequences. This mix represents the short-term use of the environment.

Environmental consequences for all alternatives fall within certain limits because of Forest wide management requirements imposed to ensure long-term productivity of the land. These requirements are contained in standards and guidelines and apply to all management prescriptions. The alternatives considered in detail do not significantly reduce long-term productivity. See Chapter 4 of the Plan for the detailed Forestwide Management Requirements and Management Area Prescriptions. Chapter 5 of the Plan contains the monitoring requirements that assure long-term productivity is maintained while meeting the goals and objectives.

Irreversible and irretrievable resource commitments are noted where appropriate. Irreversible commitments are resource uses that affect the nonrenewable resources--soils, minerals, and cultural resources. Such commitments of resources are considered irreversible because the resource has deteriorated to the point that renewal can occur only over a long period of time or at great expense, or the resource has been destroyed or removed. The irretrievable commitments represent opportunities foregone for the period during which resource use or production cannot be realized. These decisions are reversible, but the production opportunities foregone are irretrievable. Since a new plan will normally be prepared in 10 years, irretrievable losses are calculated by subtracting selected outputs of the alternatives from the alternative with the highest output in the first decade.

Probable adverse environmental effects that cannot be avoided are discussed. Unavoidable adverse effects result from managing the land for one resource at the expense of the use or condition of other resources. Management requirements in prescriptions mitigate most adverse effects by limiting the extent or duration of effects. Alternative formulation eliminated alternatives that would have resulted in excessive impacts. Mitigation/coordination measures within standards and guidelines further reduce these conflicts.

Short-term uses are those that occur annually while long-term productivity refers to the capability of the Forest to continue producing goods and services to the end of the planning period and beyond. Short-term uses are timber and fuelwood harvest, all recreation uses, livestock grazing, mineral extraction, and special land uses.

Soil and water are the primary resources upon which productivity is based. Short-term uses that damage soils and soil-water relationships impair long-term productivity. Management requirements provide for protection of long-term productivity by requiring that impacts on soils and water from short-term uses be mitigated and/or that short-term uses enhance soil productivity and water resources.

Net public benefits (NPB) are derived from resources with market and assignable prices as well as resources and conditions for which prices cannot be determined [see Chapter 2 for more detailed discussion of NPB]. Examples of priced components that contribute to the NPB are timber production, acre/feet of water yield increase, permitted grazing, and cords of fuelwood harvested. Examples of nonpriced components that contribute to the NPB are acres of visual quality, amount of soil lost, acres of threatened or endangered wildlife habitat enhanced or maintained, and the quality of a wilderness experience.

Nonpriced benefits include quantitative and qualitative outputs and effects. Quantitative and qualitative outputs and effects are crucial in understanding the whole picture of environmental consequences and NPBs. For example, watersheds are described both in terms of how much water they yield, and in terms of satisfactory or unsatisfactory condition. Quantitative and qualitative outputs are discussed in this chapter and in Chapter 2. The relationship between resource outputs and environmental qualities and consequences is explained, and where relevant, the ties between the quantitative and qualitative aspects are included.

The alternatives considered in detail resulted in little or no significant impact on several components of the environment. The components of the environment which are not significantly affected by the alternatives are listed below. These are not discussed further in Chapter 4.

- Ground water recharge
- Wetlands
- Prime farmlands
- Flood plains
- Air quality
- Noise levels
- Urban quality
- Diversity of tree species
- Regeneration of timber stands five years after final harvest
- Native American religious freedom

Predicted outputs for the planning period were developed using FORPLAN. Additional detail on predictions of multi-resource interactions for each alternative is included in planning records on file at the Forest Supervisor's Office and in Appendix B.

RECREATION General

The effects on the recreation resource by various alternatives is not evident by referring to output charts alone. Within the recreation spectrum there are levels of user expectation and satisfaction. Impacts on the land base, support facilities, surrounding environment, and funding levels all contribute to the success or failure in providing for quality outdoor recreation experiences.

The Forest is within districts 5 and 7 of the 1976 State Comprehensive Outdoor Recreation Plan (SCORP). The Forest has the capability to respond to the general category of "Back-Country Recreation." This category includes activities such as camping, backpacking, hiking, hunting, jeep and trail biking, and exploring. The Forest can also respond to the need for picnicking. The State plan indicates the need for opportunities to keep pace with population growth. The alternatives respond to these needs in different ways.

A good base from which comparisons may be made is the Forest's Recreation Opportunity Spectrum (ROS) system. The ROS makes use of existing land areas comprised of a mixture of elements such as accessibility, remoteness, encounters with other users, etc. These inventoried land areas represent categories which presently exist within the Forest and are subject to change depending on the alternative being considered and its emphasis on any given resource. Based on the resource emphasis assigned to each alternative, the relative impact of that emphasis can be predicted. Each class will be affected by increasing, decreasing, or remaining unchanged. Table 33 shows the relationship between classes by alternative. The minus indicates a reduction in acres, the plus an increase in acres and NC is no change.

TABLE 33. * ROS Change by Alternative

ROS class	Alternative						
	PA	A	B	C	D	E	F
Primitive (P)	NC	NC	NC	NC	NC	+	+
Semi-Primitive (SP)	+	-	-	-	-	+	+
Semi-Primitive Motorized (SPM)	-	-	-	-	-	-	-
Roaded Natural (RN)	-	+	+	+	+	-	-
Rural (R)	NC	NC	NC	NC	NC	NC	NC
Urban (U)	There is no Urban class on the Gila.						

* Represents change over the five decades of the planning period.

From the above table, it is possible to draw some conclusions as to the effect an alternative may have, from a recreation standpoint, within the Recreation Opportunity Spectrum. The following identifies the significance of the changes portrayed in the above chart:

Primitive (P) - There is no effect on this class in Alternatives PA, A, B, C, and D. This class occurs only within classified Wilderness. Only in Alternative E and F will there be any change. As a result of the addition to Wilderness of the Hells Hole Wilderness Study Area and the Lower San Francisco River Wilderness Study area, there will be additional acreage added to the Primitive class.

Semi-Primitive (SP) - As a result of roads created for timber sales, all alternatives will convert some Semi-Primitive class to Roaded Natural. In Alternative PA, E, and F, however, road and travelway closures will result in more acres becoming Semi-Primitive than those changed to Roaded Natural. This results in a net increase in Semi-Primitive opportunities in Alternatives PA, E, and F.

Semi-Primitive Motorized (SPM) - All alternatives result in fewer acres in the Semi-Primitive Motorized class. In Alternatives PA, E, and F, Semi-Primitive Motorized Acres are converted to Roaded Natural through timber sale activities. Additional Acreage is converted to Semi-Primitive through road and travelway closures. In Alternatives A,B,C and D, more Semi Primitive Motorized acreage is converted to Roaded Natural through timber sales.

Roaded Natural (RN) - As a result of timber activities, all alternatives will increase the number of acres in the Roaded Natural Class. Alternatives that result in the highest number of acres logged result in the largest acreage additions to this class.

Rural (R) - There will be no changes to this class in any alternative. The nature of this class prevents further recruitment of acreage on the Forest. This class is more appropriate in forests associated with metropolitan areas.

Urban (U) - The urban class is not represented on the Gila National Forest and none of the alternatives will create this situation.

Dispersed Recreation

There is no significant difference in the outputs in dispersed recreation between the alternatives. There is a difference, however, in the quality and type of dispersed recreation opportunity available to the visitor. The major differences are in the Forest's ability to maintain trails, roads, and support facilities and in the shifting of traditional user activities from one form of recreation to another (non-vehicular to vehicular oriented.)

In 1981, dispersed recreation was classified as high from both a quality and quantity standpoint. Each of the alternatives will affect that quality and the mix of available opportunities to some degree. It is assumed that the conversion of Recreation Opportunity classes does not represent a negative impact on the quantity of available recreation opportunity, just a change in opportunity type. The acre changes in Recreation Opportunity classes will not affect the total amount of land where activities not dependent on improvements can be pursued .

Alternatives PA and B provide for an increased recreation budget over time. This increased budget will provide for increased maintenance of facilities and increased services as recreation demand increases. The portion of recreation quality associated with facilities will, therefore, not change. Alternative F provides for an increase in budget sufficient to increase facilities and services. This alternative will increase the portion of recreation quality associated with facilities and services. In all other alternatives, the portion of recreation quality associated with facilities and services would be expected to decline over time.

All alternatives except Alternatives PA, E and F will tend to reduce the acres available for semi-primitive non-motorized types of recreation and, therefore, reduce the existing mix of opportunities. Over the first 50 years in the planning horizon, all suitable timber acres will be entered and roaded. The PA alternative will road the least area, followed by Alternatives E, F, A, C, B, and D (in order of increasing roaded acres). Because of the intensity of management, Alternatives D, B, and C are expected to have the largest impact on the recreation opportunity mix. This is because the timber activities will result in the areas entered providing opportunities at the more developed end of the RN category. Alternative A will result in areas entered appearing more natural than in Alternatives D, B, and C. The existing breakdown for the entire Forest, including Wilderness, is shown in Table 34.

TABLE 34. Forest Acreage by RDS Class

RDS class	Acres
Primitive	526,611
Semi-Primitive	787,063
Semi-Primitive Motorized	240,940
Roaded Natural	1,768,071
Rural	5,083
Urban	0

Irretrievable Commitment

Since all alternatives provided for similar levels of total dispersed recreation, there is also no irretrievable commitment of resources.

Developed Recreation

Developed recreation is limited to 36 sites scattered over the entire Forest. These areas total less than 300 acres. There is limited potential for expansion of existing sites or the creation of new ones. A combination camping/day-use area, some trail head facilities, a minor winter play area, and other improvements identified in the Gila Corridor Study constitute the extent of new development opportunities. To be considered a potential site, an area must have a higher value to the public for recreation than for other resource uses.

There are essentially three levels of development possible within the structure of the alternatives. These levels consist of full potential development, moderate potential development, and present level development. The alternatives and the levels of development are displayed in Table 35.

TABLE 35. Recreation Development Level

Alternative	Development Level
PA,E,F	Moderate Level
B	Full Level
A,C,D	Present Level

The full potential development level provided by Alternative B will increase the people-at-one-time (PAOT) capacity from a current level of 2,858 to approximately 3,450. This alternative will add an additional 100 to 150 acres to the total developed site acreage. This will also insure that the projected future use figure of 275,000 Recreation Visitor Days (RVDs) will be met.

Under Alternatives PA, E, and F, there will be a moderate increase in new sites. The increase will result in a capacity of about 3,200 PAOTs. These alternatives will add an additional 50 to 100 acres to the total developed site acreage.

This level of development will generate approximately 190,800 RVDs. The projected use figure of 275,000 developed RVDs by the end of the fifth time period will not be met without incurring overcrowding.

In Alternatives A, C, and D, no additional new facilities will be developed. The major consequence to developed recreation under these alternatives is inadequate maintenance, making it necessary to abandon some sites. Under these alternatives, the capacity of developed sites will be reduced. It is predicted that by the end of the fifth time period, the developed sector will be capable of only producing approximately 139,000 recreation visitor days annually; a loss of 32,500 recreation visitor days from current levels.

This will create greater pressures on the developed sites which still remain in operation. It will also serve to escalate the wear and tear on the improvements within each developed site and will result in occasional overcrowding, especially during major holidays.

**Irretrievable
Commitment**

Since the existing developed recreation supply meets the demanded level, there is no irretrievable commitment of resources.

**Wilderness
Recreation**

Existing Wilderness on the Gila consists of three separate areas, the Gila, the Aldo Leopold, and the Blue Range. The aggregate acreage for the areas totals approximately 789,386 acres. The areas contain the following acres

<u>Wilderness Area</u>	<u>Acreage</u>
Gila	558,065
Aldo Leopold	202,016
Blue Range	29,304
Total	789,386

Wilderness permits have been required on the Gila and Aldo Leopold Wilderness since 1978. It has been possible, therefore, to identify with relatively good accuracy the visitor use in the two wilderness areas. Permits were not required in the Blue Range. Visitor use of this area is estimated by observation and established Recreation Information Management (RIM) practices.

Collectively, the three wilderness areas currently receive approximately 87,300 recreation visitor days (RVDs) annually. The estimated future use by the end of the fifth time period is 117,800 RVDs. Alternatives E and F will provide additional wilderness recreation opportunities.

By the end of the fifth time period, impacts on the wilderness resource may require more intensive wilderness management. None of the alternatives are expected to have a negative effect on the number of visits annually. However, impacts on the quality of experience for the visitor may result. Quality of both the resource and the expectations of the wilderness visitor are a direct product of the overall management capability of the Forest Service. Alternatives with high funding levels programmed for wilderness will provide for a high quality experience, while those with lesser appropriation will eventually result in lower quality.

The wilderness acreage base remains unchanged in all alternatives except for Alternatives E and F. In Alternatives E and F, two additional areas totaling approximately 27,660 acres will be recommended for addition to the Wilderness System. The major factors influencing management of the various wilderness areas are adequate personnel, maintenance, and the construction and reconstruction of support facilities.

Wilderness resource and experience levels enjoyed by the visitor will be high in Alternative F and PA. In these alternatives, all facilities, including trails, will be maintained and new high priority facilities will be constructed. Personnel will continue to be available to direct visitors to the more unused portions of the wildernesses and head off potential impacts on the land. The wilderness resource quality will remain high.

Alternatives A, C and D will not provide for maintenance needed to prevent deterioration of improvements. Over time, more improvements will deteriorate to the point of requiring abandonment. Lower wilderness management intensity will result an inability to respond to resource problems as they surface.

Alternatives E and B offer a compromise which will result in high to moderate quality in both resource and visitor experience level. Priority wilderness management objectives will be accomplished. There will be some deterioration of improvements, but not to the extent that abandonment will be necessary. Essentially, the needs and expectations of the visitor will be met, but some of the extras that make the difference between good and excellent will be missing.

Wilderness Study Areas

There are two Wilderness Study Areas (WSA) identified on the Gila by the New Mexico Wilderness Act. These are the Hells Hole and the Lower San Francisco River. The two areas represent an additional 27,660 acres collectively. There are approximately 18,860 acres in the Hells Hole area and 8,800 acres in the Lower San Francisco area.

The two wilderness study areas are recommended for wilderness designation in Alternative E and F. Both areas would be recommended in their entirety. With the addition of the two areas, it is anticipated that an increase of only 2,200 wilderness recreation visitor days will be realized annually. This is primarily due to the remoteness and repetitiveness of the settings and environment which is well represented in the nearby existing Wildernesses. Of the two areas, the Lower San Francisco River receives the greater use, probably due to the appeal of water and associated activities.

Wilderness classification for the Lower San Francisco WSA will result in the loss of existing vehicle use in the unit. Off-road vehicle touring has been an established use in the river bottom for many years. There is no evidence indicating that the limited ORV use of the river is causing unacceptable resource damage. Conflicts do exist between ORV uses and the non-motorized users. There is very strong resistance to Wilderness designation by some local residents.

The non-wilderness recommendation in Alternatives A, B, C, D and PA will result in little immediate change in either wilderness study areas. The New Mexico Wilderness Act states that the areas have to be managed to protect the values that allowed the areas to become wilderness study areas until congress responds to the recommendation. All Alternatives provide for compliance with the law.

If the non-wilderness recommendation is accepted by congress, fuelwood harvest proposed in Alternatives A, B, C and D could result in changes in the character of the Hells Hole area in the first decade. In the PA Alternative the area would be managed to maintain its semi-primitive recreation opportunities. The semi-primitive character of the Lower San Francisco would be maintained in all alternatives.

In all Alternatives that contain a nonwilderness recommendation for the Lower San Francisco River, all or a portion of the wilderness study area would remain open to vehicles. In 1981, shortly after the area became a wilderness study area, a spring closure was imposed to protect nesting Black Hawks and other wildlife. After the closure was enacted, a study of the canyon done by the Museum of Northern Arizona (Riparian Ecology of the San Francisco River: Carothers, Steven W. et. al.) indicated that the Black Hawk was not nesting in the Main Canyon. In the study summary the following statement was made: "It is suggested that the mainstem San Francisco River is marginal habitat for the Mexican Black Hawk because the perennial flow of the river is sufficiently turbid that aquatic prey are relatively unavailable to the raptors". The summary also contained the Statement that "There is no evidence at the present time that human occupation of the principal drainageway of the San Francisco River is detrimental to the breeding success of the Mexican Black Hawks...". For this reason, the original seasonal closure is no longer warranted.

The study of the canyon mentioned above did suggest that the vehicle use of the canyon may cause erosion of the river benches. This conclusion was made by the biologists that did the study and was based on observations that several benches showed evidence of channelization near the back of the benches where off road

vehicle use may have occurred. A Forest Service hydrologist has examined several similar benches and has found rocks and other objects that would have diverted high flow waters over these portion of the benches regardless of the vehicle use. Most of the soils in the canyon are unconsolidated sands and erode very easily. Periodic floods in the canyon result in water covering most of the canyon riparian benches. There is no evidence that the limited off road vehicle use of the canyon has significantly affected the natural erosion rates.

In Alternatives A, B, C, and D, the canyon would be open year round for motorized and nonmotorized use. Use would be monitored so that unexceptable resource damage does not occur. These alternatives would provide for motorized use of the canyon without significant environmental damage but the conflicts between motorized and nonmotorized use would not be resolved.

Alternative PA provides for motorized use of the portion of the wilderness study area above Mule Creek and nonmotorized use of the portion of the wilderness study area below Mule Creek. This alternative provides for motorized and nonmotorized use of the canyon without unexceptable resource damage and helps resolve user conflicts.

**Irretrievable
Commitments**

The loss of the expected 2,200 wilderness recreation visitor days and the loss of 27,660 acres of potential wilderness in all of the alternatives except Alternative F and E is the only irretrievable commitment associated with the alternatives.

**Wild & Scenic
Rivers**

Two river systems have been named by the National Park Service as qualified for classification under the Wild and Scenic Rivers Program. They are the San Francisco and Gila Rivers. The segments of these rivers are described in Chapter 3.

In Alternative F, all eligible segments of the San Francisco River will be recommended for classification. This will place 27 miles of river in Wild and 12 miles in Scenic categories. None of the segments will qualify under the Recreation category. Only those segment miles falling within National Forest lands will be classified. Of the segments which qualify, segment 10 possesses the greatest contiguous mileage. This segment also falls within the Lower San Francisco Wilderness Study Area which will be proposed for Wilderness classification under Alternative F. If the wilderness study area should fail to be selected by Congress as a Wilderness Area, then the river could be classified as Wild and would then conform to all regulations governing Wild River status.

In Alternative F, all segments of the Gila River that are not within the Gila Wilderness will also be recommended for classification. This will place eight miles of the Gila River in the Wild category and five miles in the Recreation category. Segment one is within the Gila Wilderness. As a result, it was not recommended for a Wild classification under the Wild and Scenic River Act. Its Wild river characteristics are already preserved.

The Bureau of Reclamation's proposed Conner Dam would affect eight miles of the river in the Burro Mountains. The Bureau is presently studying the resources impacted by the dam and several alternatives to the dam. These studies will be combined into an E.I.S. for the dam should feasibility studies be favorable. Construction of the dam, if feasible, is not expected during the first decade after the Plan is implemented.

All other alternatives recommend that the rivers not be classified.

**Irretrievable
Commitment**

There are no irreversible or irretrievable recreation commitments associated with Wild, Scenic, or Recreation River classifications.

**Undeveloped Portions
of the Forest**

The Forest presently contains approximately 699,000 acres in undeveloped areas. Green fuelwood harvests and timber harvests proposed in all alternatives result in the development of parts of these areas. The development effects vary by alternative. Table 36 shows the first and fifth decade development effects on undeveloped acres. The effects are shown for areas defined by geographic features.

Table 36 - The Development Effects on Presently Undeveloped Portions of the Forest.

Geographic Area	Existing Undeveloped Acres	Alternative PA Acres		Alternative A Acres		Alternative B Acres		Alternative C Acres	
		Affected First	Affected Fifth	Affected First	Affected Fifth	Affected First	Affected Fifth	Affected First	Affected Fifth
Nolan	11,630	0	7380	728	2456	0	9290	0	9290
Mother Hubbard	6,090	0	6090	0	0	0	6090	0	6090
Hells Hole	18,860	0	0	0	4760	0	5060	0	5060
Lower									
San Francisco	25,560	0	0	0	0	0	0	0	0
The Hub	7,770	0	0	0	0	0	0	0	0
Brushy Spring	5,790	0	0	0	0	0	0	0	0
Frisco Box	40,050	1950	5688	2117	6588	5410	5624	0	5220
Brushy Mtn.	7,890	0	0	0	0	0	0	0	0
Aspen Mtn.	19,510	1907	7267	14307	19287	1907	7307	0	7307
Wagon Tongue	11,560	4000	11560	0	6600	0	6660	0	11560
Eagle Peak	27,180	7105	11259	9462	12974	7105	14633	5910	11259
Devils Creek	89,595	2500	6565	8790	15940	4945	21720	3195	23000
Gila Box	24,350	0	0	0	0	0	0	0	0
Elk Mtn.	4,475	0	0	0	0	0	0	0	0
T Bar	6,980	0	0	0	0	0	0	0	0
Canyon Creek	9,235	1950	5240	0	5240	2800	5240	2440	2440
Contig. to Gila									
Wilderness	73,515	1050	7545	9183	16921	510	16003	3190	17837
Taylor Creek	6,130	0	0	0	3140	0	2960	0	180
Stone Canyon	7,340	0	0	0	0	0	0	0	0
Wahoo Mtn.	22,080	0	0	0	0	0	0	0	0
Poverty Creek	10,260	0	0	0	0	0	0	0	0
Dry Creek	29,560	0	0	0	0	0	0	0	180
Contig to Aldo									
Leopold W.		0	0	0	4933	0	18625	0	13400
Largo	13,110	0	0	0	0	0	0	0	0
Sawyers Peak	64,200	0	0	0	0	0	0	0	0
Meadow Creek	34,140	140	1850	0	12075	1588	12975	645	645
Contig to Blue									
Range W.	10,795	0	0	0	0	0	0	0	0
TOTAL	699,015	20611	70464	49532	110914	24265	132127	20702	176707

Table 36 (CONTINUED) - The Development Effects on Presently Undeveloped Portions of the Forest.

Geographic Area	Existing Undeveloped Acres	Alternative D		Alternative E		Alternative F	
		Acres Affected First	Acres Affected Fifth	Acres Affected First	Acres Affected Fifth	Acres Affected First	Acres Affected Fifth
Nolan	11,630	0	9290	0	7380	0	1728
Mother Hubbard	6,090	0	6090	0	6090	0	0
Hells Hole	18,860	0	5060	0	0	0	4760
Lower							
San Francisco	25,560	0	0	0	0	0	0
The Hub	7,770	0	0	0	0	0	0
Brushy Spring	5,790	0	0	0	0	0	0
Frisco Box	40,050	0	5220	0	5220	0	100
Brushy Mtn.	7,890	0	0	0	0	0	0
Aspen Mtn.	19,510	0	7307	0	940	0	7527
Wagon Tongue	11,560	0	11560	0	4840	0	2880
Eagle Peak	27,180	8047	12974	3550	7116	1840	8079
Devils Creek	89,595	4215	30425	4240	9705	3320	8395
Gila Box	24,950	0	0	0	0	0	0
Elk Mtn.	4,475	0	0	0	0	0	0
T Bar	6,980	0	0	0	0	0	0
Canyon Creek	9,235	2440	5240	0	5240	0	5240
Contig. to Gila							
Wilderness	73,515	5355	18856	1935	8965	0	14531
Taylor Creek	6,130	0	0	0	180	0	2960
Stone Canyon	7,340	0	0	0	0	0	0
Wahoo Mtn.	22,080	0	0	0	0	0	0
Poverty Creek	10,260	0	0	0	0	0	0
Dry Creek	29,560	0	1402	0	180	0	529
Contig to Aldo							
Leopold W.		0	52840	0	2440	3320	48785
Largo	13,110	0	0	0	0	0	0
Sawyers Peak	64,200	0	7380	0	0	0	0
Meadow Creek	34,140	645	645	850	12075	0	12075
Contig to Blue							
Range W.	10,795	0	0	0	0	0	0
TOTAL	999,015	20702	176707	9610	70371	8480	56,935

Alternative F results in the fewest acres being developed in the first decade. This alternative is followed by alternatives E, C, PA, B, D and A (listed from least to most development). In the long term, Alternative E results in the least development of the undeveloped portions of the Forest, followed by alternatives PA, A, C, F, B, and D (listed from least to most development).

Visual Resources

The visual resource on the Gila was inventoried using the Service-wide Visual Management System (VMS). The system utilizes a combination of land type, land characteristics, viewing distance, and viewer significance to arrive at a relative value scale. The initial findings represent the condition of the landscapes within the Forest at the time of inventory (1981) which provides a base for comparison through time. The initial findings were appropriately called "Visual Quality Levels". These levels, with the exception of Preservation (P), are dependant on the various relationships between the variables mentioned above. Preservation, is assigned to lands having Wilderness status or having significance such as a Research Natural Area, where only natural change is desired. The Visual Quality Levels established for the Gila National Forest are displayed in Table 37.

TABLE 37. Visual Quality Levels

Visual Quality Level	Acres
Preservation (P)	812,851
Retention (R)	44,258
Partial Retention (PR)	613,340
Modification (M)	1,320,132
Maximum Modification (MM)	453,162

All of the alternatives will affect the relationship of the levels above and will create changes in the visual resource and overall aesthetics. These changes are brought about through the manipulation of both the land base and vegetative cover regimes. An additional consideration will be the exposure of the viewer to various landscapes previously unseen or seen from less critical viewing positions. Generally, the greater or more extensive the commodity emphasis, the greater the impacts on visual resources. Also, very intensive management activities on concentrated land areas create impacts on the visual resource. These impacts tend toward the Maximum Modification end of the scale. All levels listed above are acceptable in terms of actual application on the ground, however, they may become socially unacceptable due to public expectations, exposure, and political ramifications. Table 38 below identifies the anticipated impacts each alternative will have on any given Level. These changes are expressed in terms of a + or - in each category or a No Change [NC].

TABLE 38. Potential Alternative Impact to Visual Quality Levels

Level	Alternative						
	PA	A	B	C	D	E	F
Preservation [P]	NC	NC	NC	NC	NC	+	+
Retention [R]	NC	-	-	-	-	NC	+
Partial Retention [PR]	+	-	-	-	-	+	-
Modification [M]	-	+	+	+	+	-	NC
Max. Modification [MM]	NC	+	+	+	+	NC	NC

Preservation [P]: In Alternatives PA, A, B, C, and D there will be no additional acres assigned to this level. Alternative F and E would add Wilderness to the existing base creating additional Preservation Level acres.

Retention[R]: Alternative E emphasizes range and wildlife opportunities. The PA Alternative results in the fewest acres being logged in the first 50 years. As a result, areas that presently qualify as Retention will remain essentially unaffected. In Alternatives A, B, C, and D, the emphasis on timber management is such that additional access and/or the intensity of activity on the ground will result in some of the acres being converted from Retention to Partial Retention or below. Only Alternative F will create additional acreage in this Level by allowing areas of Partial Retention to assume, over time, the characteristics necessary to meet Retention.

Partial Retention[PR]: All alternatives except Alternatives PA and E will reduce this level. The greatest reductions will occur in Alternatives C and D. In Alternatives C and D the emphasis on timber management, coupled with the high intensity of activity within those acres, will result in higher exposure and increased disturbance levels that will not meet the Partial Retention Objective. Next, in terms of emphasis and intensity, are Alternatives A, and B. In Alternative F, some of the Partial Retention acres would move into the Retention category. In Alternatives PA and E, some Modification acres would be expected to revert to Partial Retention.

Modification[M]: Modification will increase in Alternatives A, B, C, and D. The increase in Modification is due to reasons identified in the Partial Retention discussion above. Timber activities in Alternative F will result in insignificant change. Because of the relatively small number of acres that would be logged in Alternative PA and E, some of the Modification acres would revert to Partial Retention.

Maximum Modification[MM]: Alternatives A, B, C, and D will increase acres in this level. Alternatives C and D result in the greatest increase. Alternatives PA, E and F will not appreciably affect acreage in this level.

Irretrievable Commitment

Since opportunity lost as a result of viewing one type of landscape over another is very difficult to quantify, irretrievable commitment of the visual resource was not considered to be measurable.

WILDLIFE AND FISH Wildlife Habitat

The level of other resource uses, habitat improvement, and wildlife coordination affect habitat carrying capacity on the Forest. Effects on both quantity and quality of wildlife habitat vary by individual alternative.

Other resource uses affect the quantity, and to some extent the quality, of the various habitats available. Levels of livestock use, for example, affect amounts of forage available for wildlife. Range improvements such as water developments and seeding can be of benefit to habitats, provided segments of forage within those zones are made available for wildlife use. Unmanaged livestock concentrations can be detrimental especially in riparian zones. Through management, however, livestock use can be utilized as a tool in rejuvenating browse stands, removing vegetative growth or changing vegetative compositions where objectives are established through habitat coordination.

Silvicultural timber harvests open stands and create additional foraging habitat. Old growth, squirrel nest, overstory cover and turkey roost habitats are detrimentally affected by pure silvicultural treatment unless stand modifications and extended rotations are included. Creation of open timber stands over large areas adversely affect habitat diversity and carrying capacity. Managing for small stands and a diversity of age classes between stands can be beneficial where integrated with habitat needs. This includes habitat needs for both island habitats and minimum area needs.

Quantity of habitat is affected by the mix of these factors within each alternative. The effect of each alternative on quantity of wildlife habitat is displayed in Table 39. This represents the percent of change in existing components by the end of the fifth time period, and is based on quantified habitat data within each alternative. Reduction of habitat acres does not always result in reduced habitat capacity. Habitat distribution and quality and quality must also be considered. Distribution and quality are discussed in the following section and the overall effects on habitat capacity are displayed in Table 41.

TABLE 39. Percent of Change in Existing Habitats Expected by End of 5th Period

Habitat Component	Alternative						
	PA	A	B	C	D	E	F
Old Growth (Acres)	-12%	-12%	-16%	-20%	-25%	-9%	-8%
Cover Habitat (Acres)	-20%	-23%	-26%	-26%	-33%	-16%	-14%
Turkey Roost Habitat (Acres)	-12%	-20%	-27%	-21%	-25%	0%	+8%
Squirrel Nest Habitat (Acres)	-9%	-15%	-14%	-15%	-19%	-8%	-7%
Wildlife Forage and Herbaceous Cover, (WAUMs)	+30%	+2%	+22%	-17%	-11%	+56%	+138%

The quality of wildlife habitat is affected by levels of wildlife coordination along with direct and indirect habitat improvements.

Wildlife appropriations provide for wildlife coordination with other resource uses and generate most direct habitat improvements. Wildlife coordination with other resource uses affects quality of habitats and has a direct bearing on future habitat carrying capacities. Habitat distribution, quality, and diversity are directly related to levels of coordination. Direct habitat improvements include such actions as browse pruning, wildlife seeding, protection fencing, wetland/water developments, etc. Additional improvements identified through coordination result from Knutsen-Vendenburg (K-V) Act collections from the sale of timber and firewood.

Indirect habitat improvements result primarily from range, timber, and fire activities. These include beneficial alterations of habitat distribution or beneficial seeding, planting, water development, etc. which are designed primarily to meet objectives of other resources.

The quality of wildlife habitat is affected by levels of wildlife coordination along with direct and indirect habitat improvements.

Coordination of open road densities and road locations in or near elk calving, turkey nesting, winter range, or other key habitat areas varies by alternative. Roads for timber harvest can affect habitat quality, depending on location and open road densities. Effects include wildlife disturbance and stress during critical periods as the result of road construction, reconstruction and maintenance, as well as industrial and recreational uses.

Island habitats and minimum area requirements are important habitat criteria when considering increased or decreased habitat diversity. Attempts to increase habitat diversity in specialized island habitats for example is not appropriate. The coordination of these habitat quality considerations varies by alternative.

Effects of each alternative on quality of wildlife habitat is summarized in Table 40. This table displays the relative difference in levels of habitat coordination, planning, and improvement. The percent of change under each alternative is a comparison of fifth period levels to existing 1981 levels.

TABLE 40. Percent Change in quality due to Coordination and Habitat Improvements by End of the Fifth Period. Comparison is to Existing Levels.

Comparison to Current Direct and Indirect Habitat Improvement.	Alternative					
	PA	A	B	C	D	E F
	+117%	+17%	+146%	-25%	-25%	+148% +767%

The overall effect of changes in both quantity and quality of wildlife habitats is summarized in Table 41. Even though the quantity of certain habitat components may decline under many of these alternatives, the levels of coordination and improvement associated with quality of habitat can offset the overall effects on wildlife carrying capacities.

A qualitative comparison of the overall effects of each alternative on both quality and quantity of wildlife habitat is summarized in Table 41.

TABLE 41. Overall Effect of Each Alternative on Both Quality and Quantity of Existing Habitat Available for Wildlife Use.

Alternative	Effect on Levels of Habitat Diversity and Carrying Capacity.
PA	Moderate Increase
A	Slight Decline
B	Moderately-Low Increase
C	Moderate Decline
D	Moderate Decline
E	Significant Increase
F	Substantial Increase

Alternative F best meets a distribution of habitats from a habitat capability standpoint. Under this alternative, there is a build-up of native habitat components in currently deficient areas. A slight reduction in the high successional stage habitats (i.e. oldgrowth, etc.) will occur in some areas as habitat distributions are achieved. This will specifically occur in wilderness areas where reduced fire occurrence interrupted the natural maintenance and creation of early successional stages. Current wildlife forage and herbaceous cover availability will more than double under alternative F. Wildlife inventories and plans are at levels assuring diverse and healthy populations of all native wildlife species. Direct and indirect habitat improvements are at levels which substantially increase habitat carrying capacity and enable recovery of most threatened and endangered species on the Forest by the end of the fifth period.

Alternative E provides the next highest level of increased wildlife diversity and carrying capacity. Projected wildlife forage availability would be approximately fifty percent higher than current levels. Capabilities for habitat restoration, improvement and coordination is increased but is not near the levels found in Alternative F. This resulting level of coordination and improvement will still result in a significant increase on existing habitat carrying capacity by the end of the fifth time period. Increased habitat diversity in wilderness will occur, however, levels of prescribed natural fire and/or planned ignitions will be below those in Alternative F. Additionally, time frames for recovery of some threatened and endangered species on the Forest will be extended beyond the fifth time period.

The Proposed Action (PA) Alternative is similar to Alternative E, except that both quantity and distribution of certain habitats such as turkey roosts and available wildlife forage would be about 50 percent lower. Coordination and

habitat improvement is also 20 percent lower resulting in a moderate overall increase under this alternative. The PA alternative includes prescribed fire from unplanned and/or planned ignitions. This will aid restoration of natural habitat diversity in wilderness areas. Inventories and plans for future habitats still enable adequate integration of species habitat needs with other resource uses and also enable establishment of priorities for maintenance and improvement of habitats. A moderate overall increase in existing habitat carrying capacity will occur by the end of the fifth time period. Timeframes for recovery of a number of threatened and endangered species extend beyond the fifth time period.

Alternative B is similar to the PA alternative except coniferous forest and herbaceous habitats are reduced 20-50%. Coordination and habitat improvement levels would increase slightly and would aid somewhat in offsetting decreased habitat carrying capacity. Projected habitat amounts and distributions would result in a moderately-low increase in wildlife carrying capacities on the Forest.

Alternative A is current management which projects an additional reduction in wildlife forage and herbaceous cover availability [approximately 28 percent below the Proposed Action Alternative]. Quantities of coniferous forest habitats will be similar to those projected under Alternative B., however, habitat distribution and habitat diversity will be reduced. Unnatural trends toward reduced habitat diversity will continue in wilderness areas. Continued trends toward disproportionate levels of early successional stages will continue in nonwilderness areas. Coordination with other resource uses is primarily limited to mitigation of habitats on a project-by-project basis. General habitat guidelines will normally be involved except where sensitive species habitats are identified. Specific inventories and plans for future habitats primarily emphasize needs of threatened and endangered species or other species nearing minimum viable population levels. A slight decline in the existing habitat carrying capacity will occur by the end of the fifth time period. Recovery of threatened and endangered species habitat will be a slow process under current management levels.

Alternatives C and D will reduce wildlife habitat capabilities on the Forest to levels approximately 25 percent below existing status. Habitat diversity, the level of habitat improvement, and coordination will be substantially reduced. Existing downward trends in wilderness habitat diversity will continue. Habitats for wildlife outside wilderness will continue trends toward unnaturally large zones of early successional stages, along with limited distribution of late successional stages. Emphasis on habitat diversity will be limited to relatively small areas necessary to support threatened and endangered species and other species nearing minimum viable population levels. Species whose habitat requirements are not in conflict with accelerated livestock forage use or timber harvest should remain at or above existing population levels. Recovery of threatened and endangered species would be very slow as plans, coordination, and improvements are limited.

Indicator Species

Management indicator species were selected to simplify evaluation of impacts on vertebrate wildlife species. These species provide indications of effects of alternative resource management levels. The percent of qualitative impact on indicator species habitat is presented in Table 42. Positive and negative percentages for each indicator are based on changes in existing habitat quantity and the levels of coordination or improvement programmed for applicable wildlife.

TABLE 42. Percent of Effect on Existing Indicator Species Habitat by End of Fifth Time Period

Indicator Species	Alternative					
	PA	A	B	C	D	E
Elk	+30	+3	+25	-50	-60	+150
Mule Deer	+35	+10	+30	-10	-15	+200
Antelope	+65	+9	+50	-5	-10	+400
Abert Squirrel	-15	-15	-14	-18	-22	+4
Red Squirrel	-14	-15	-11	-25	-33	+5
Arizona Gray Squirrel	+10	-5	+10	-15	-10	+100
Blacktail Jackrabbit	+5	+20	+5	+25	+25	-20

TABLE 42. [CONTINUED] Percent of Effect on Existing Indicator Species Habitat by End of Fifth Time Period

Indicator Species	Alternative						
	PA	A	B	C	D	E	F
Longtail Vole	+10	+15	+10	+20	+25	-10	-15
Mexican Vole	-5	+10	-5	+15	+10	-20	-25
Beaver	+10	-5	+10	-15	-10	+40	+90
Turkey	+50	-10	+20	-20	-25	+80	+120
Blue Grouse	+40	+5	+30	-5	-10	+150	+250
Mearns Quail	+50	-10	+40	-20	-25	+80	+150
Horned Lark	-10	+15	-5	+15	+15	-20	-30
Plain Titmouse	+5	-10	+5	-20	-20	+10	+20
Hairy Woodpecker	-7	-15	-11	-25	-30	+5	+10
Spotted Owl	-7	-15	-11	-25	-30	+5	+10
Killdeer	-5	+10	-5	+15	+10	-8	-10
Black Hawk	+5	-10	+5	-15	-10	+20	+30
Mallard	+10	-15	+10	-25	-20	+30	+90
Yellow Warbler	+5	-10	+5	-15	-10	+20	+25
Hooded Oriole	+5	-10	+5	-15	-10	+20	+25
Common Flicker	0	-10	0	-25	-25	+10	+20
Sonoran Desert Sucker	-10	+10	-10	+30	+25	-20	-30
Resident Trout	+10	-10	+10	-25	-20	+20	+30

New Mexico
Comprehensive Plan

Management requirements responding to New Mexico's Comprehensive Plan for Wildlife are discussed in the Plan. Each alternative includes varying levels of habitat management which affect Forest capabilities in meeting objectives of the State Wildlife Plan. Table 43 displays qualitatively the success of each alternative in meeting the state wildlife objectives.

TABLE 43. Attainment of New Mexico Game and Fish Departments Comprehensive Plan Objectives.

Alternative	Big Game Goals	Non Game Goals	T&E Recovery Rate
PA	Almost Meets	Partially Meets	Moderate
A	Minimally Meets	Minimally Meets	Slow
B	Partially Meets	Partially Meets	Moderate
C	Does Not Meet	Does Not Meet	Very Slow
D	Does Not Meet	Does Not Meet	Very Slow
E	Meets Goals	Almost Meets	Moderately High
F	Fully Meets	Fully Meets	High rate

Big Game Species

Carrying capacity of existing levels of big game species will increase substantially under Alternative F. Alternative E provides a somewhat lower level but still results in a significant increase. Alternatives PA and B provide moderate increases. They are, however, constrained by levels of other resource uses along with lower levels of wildlife improvement and coordination. Alternatives A, C, and D reduce carrying capacity levels for most big game species.

Game Fish Species

Alternatives F and E provide significant improvement in the fish carrying capacity of cold water stream zones. A moderate improvement in warm water game fish is also involved in the lower Gila and San Francisco River systems.

The PA and B Alternatives provide for a slight increase in trout habitat capacity but little change in warm water game fish capabilities.

Alternatives A, C and D involve reduced habitat carrying capacity for game fish species.

Threatened and
Endangered Species

All alternatives provide maintenance of existing habitat capabilities for threatened and endangered species. Alternatives F and E provide for accelerated recovery of these species. Moderate increases in habitat recovery are included under Alternatives PA and B. Alternative A includes relatively slow recovery efforts while Alternatives C and D result in substantially reduced recovery levels.

Wildlife Recreation

The quantitative effect of each alternative on the supply of wildlife recreation is summarized in Table 44. Percent of change is presented as a comparison to existing levels of wildlife recreation visitor days (RVDs)

TABLE 44. Impact of Alternatives on the Supply of Wildlife Recreation by Fifth Time Period

Wildlife Recreation Supply	Alternative					
	PA	A	B	C	D	E
	+18%	-21%	+16%	-55%	-52%	+208%
						+643%

Irreversible and Irretrievable Commitment

Certain habitat types such as old growth involve extended time frames for recovery (160 years plus). Considering these time frames there are no irreversible commitments of resources. Threatened and Endangered habitats are not reduced below existing status under any alternative, and populations of all species will remain above "minimum viable population" levels.

Wildlife recreation opportunity and effects of ecological diversity are irretrievable under alternatives which reduce habitat carrying capacity. A comparison of wildlife recreation opportunity which is irretrievably lost by are presented in Table 45. Comparison is to the 422,000 recreation visitor days (RVDs) available under Alternative F.

TABLE 45. Wildlife Recreation Opportunity (RVDs) Irretrievably Lost - Decade 1

Wildlife Recreation RVD'S	Alternative					
	PA	A	B	C	D	E
	105,000	112,000	125,000	138,000	115,000	94,000
						0

RANGE

The Gila has approximately 2.3 million acres of suitable rangelands. There are approximately 1 million acres not suitable for livestock grazing because of steep slopes, unstable soils, rock outcrops, and dense timber. All lands regardless of slope are suitable for grazing and browsing by wildlife. Of the suitable rangelands on the Forest, 35 percent are in a low to moderately low ecological condition.

There is only one wild horse and burro territory on the Forest (Deep Creek). Its population is down to one horse. Recent inspections of the Deep Creek wild horse and burro territory has failed to locate any evidence of the animal.

Currently permitted livestock use totals 383,744 animal unit months (AUMs) on the Forest. Capacity for grazing livestock of the Forest is estimated at 315,078 AUMs. The best available information indicates that permitted use is 18 percent above current capacity.

An estimate of forage available for livestock and wildlife was completed based on plant physiology, range condition class, and overstory crown cover. The maximum supply could reach 445,000 animal unit months annually by the end of the fifth time period.

The objective of all alternatives is to bring the over-appropriated use of the forage resource in balance with capacity by no later than the end of the third period and to improve range condition to moderately high, where possible. All alternatives attempt to maintain a viable livestock industry while protecting the long-term productivity of the range resource.

Each alternatives effects on grazing can be shown by expressing each alternative as a percentage of the maximum capacity in animal unit months (AUMs) by the end of the fifth time period. The effects can also be shown by displaying the grazing management intensity by alternative at the end of the fifth time period, and by displaying the increase or decrease in range investments by alternative.

The Proposed Action Alternative provides for 78 percent of the maximum range benchmark capacity and permitted use at the end of the fifth time period. Alternative A is 64 percent, Alternative B is 79 percent, Alternative C is 90 percent, Alternative D is 76 percent, Alternative E is 85 percent, and Alternative F is 63 percent of the maximum range benchmark capacity and permitted animal unit months.

TABLE 46. Grazing Management Intensity Level by Alternative at end of Fifth Time Period (number of allotments by management intensity).

Management Intensity Level	Alternative						
	PA	A	B	C	D	E	F
A	0	0	0				
B	45	55	45				55
C	48	46	48	45	50	45	46
D	48	40	48	96	91	96	40
E	0	0					
X	0						
Totals	141	141	141	141	141	141	141

Proposed Action Alternative maintains a moderate level of domestic livestock animal unit months of grazing while balancing capacity with obligation. Timber harvest will create some transitory range. Wildlife forage use will vary management area by management area, as shown in the Forest Plan standards and guidelines. Range coordination with wildlife will increase and livestock use will decrease in some areas. Funding will be adequate to maintain most existing range improvements. Those management areas found to be overstocked will be addressed through the range environmental analysis process and a balancing of permitted numbers with capacity will result. Range capacity will increase in those areas found to have the potential for increasing grazing on a cost effective basis and where conflicts with other uses and activities can be minimized.

Alternative A results in a decline in management intensity. As existing facilities reach their designed life, the Forest will not be able to reconstruct them. As facilities such as fences and water developments lose their usefulness, the management intensity decreases and a loss of range capacity results. Because of the existing condition and age of facilities, most facilities will continue to function for at least the first decade. As a result, the current level of management will be sustained on most allotments for the first two periods. During the third period, there should be a rapid shift from current management intensity to less intensive management.

Alternative B is designed to meet the Resource Planning Act (RPA) assigned targets. Adequate funding will be available for increased management intensity to achieve optimum distribution and forage utilization on a cost effective basis. Where there is a potential for increasing livestock, management intensity will also increase. Permitted livestock use will be balanced with livestock capacity by the end of the second decade. In some areas, management will result in a decline in permitted livestock use for the first two periods. This will allow for vegetative recovery while the allotments are being developed. With development and increased management intensity, the livestock capacity will increase.

Alternative C provides for increased market opportunities and range outputs. Increased livestock management intensity will result in an increase in permitted domestic livestock numbers over time. This is accomplished through increasing the timber harvest, which will improve access, decrease basal area, and improve forage productivity. Capacity for livestock will also increase as wildlife use is decreased and the additional capacity allocated to range. Funds will be available to reconstruct existing improvements and construct new structural and nonstructural improvements during the first period.

Alternative D provides for increased timber harvest levels and moderate range outputs. Outputs from range will remain above the Current Level Alternative, but will be below Alternative C. Less funding for range developments will result in a decrease the level of permitted livestock use. Increased timber harvest will result in improved access and reduced basal area which will improve forage production. Capacity will increase as wildlife use is decreased and management intensity for grazing is increased. However, capacity will not increase to a level that will provide forage for the existing livestock numbers.

Alternative E provides for improved range outputs while maintaining relatively high wildlife outputs. Increased management intensity to maintain existing permitted domestic livestock numbers and to maintain wildlife use at or above current level will require a substantial investment in structural and nonstructural range improvements during the first period. Range and wildlife coordination and cooperation will increase.

Alternative F provides for emphasis on amenity values. Range intensity and capacity will decline. Funds necessary to reconstruct existing facilities are expected to be limited to range betterment funds. As facilities reach their useful life and livestock concentrations become undesirable, livestock numbers will be reduced. Management intensity can be maintained and permitted livestock use levels sustained in areas where conflicts with amenity values can be avoided and when permittees can afford to replace facilities that need replacing. All other areas will decline in management intensity and capacity will decrease. Increased forage production from transitory range will be utilized by wildlife.

Range condition varies with the management intensity of each alternative. Alternatives A and E will show some decline in range condition until adequate stocking adjustments are accomplished. All other alternatives will result in improved range condition and enhanced long term productivity. Table 47 shows the satisfactory and unsatisfactory range acres by time period and alternative.

TABLE 47. Range Condition Trend M Acres

Alternative	Condition	Period				
		1	2	3	4	5
PA	Satisfactory	1484	1514	1549	1583	1618
	Unsatisfactory	804	774	739	707	670
A	Satisfactory	1484	1450	1440	1440	1470
	Unsatisfactory	804	838	848	848	818
B	Satisfactory	1484	1510	1555	1595	1640
	Unsatisfactory	804	778	733	693	648
C	Satisfactory	1484	1530	1575	1625	1670
	Unsatisfactory	804	758	713	663	618
D	Satisfactory	1484	1495	1520	1545	1570
	Unsatisfactory	804	793	768	743	718
E	Satisfactory	1484	1530	1575	1625	1670
	Unsatisfactory	804	758	713	663	618
F	Satisfactory	1484	1550	1570	1620	1670
	Unsatisfactory	804	738	718	668	618

TABLE 48. Range Improvement Investment - M Dollars Per Period

Alternative	Funding Source	Period				
		1	2	3	4	5
PA	Forest Service	486	484	445	452	451
	Permittee	111	110	101	103	103
A	Forest Service	285	266	266	266	266
	Permittee	61	61	61	61	61
B	Forest Service	548	545	501	508	506
	Permittee	125	124	114	116	116
C	Forest Service	544	588	625	564	564
	Permittee	87	94	100	90	90
D	Forest Service	346	431	345	355	357
	Permittee	67	77	66	68	68
E	Forest Service	553	534	514	496	502
	Permittee	99	97	92	91	91
F	Forest Service	256	257	256	257	257
	Permittee	59	59	59	59	59

Alternatives that project increased management intensity requires investment in structural and nonstructural improvements. Structural improvements include fencing and water developments to control and distribute livestock. Nonstructural improvements include control of brush, planting palatable grasses on productive rangelands under 40 percent slope, and improving a portion of pinyon-juniper vegetative type by modifying the overstory to provide for increased production on lands with slope under 15 percent.

In all alternatives, range related improvements in pinyon-juniper stands scheduled for completion in the first two periods will be maintained as grassland throughout the planning period. Fuelwood harvest is utilized to the extent possible to accomplish the pinyon-juniper modification and maintenance of existing treated areas. Fuelwood harvests in the pinyon/juniper type will also increase the forage capacity. This increase in forage productivity is only temporary as the increased growth in the pinyon/juniper stands offset the increased capacity.

Irretrievable Commitment

Table 49 displays the irretrievable commitment of the range resource. This is the difference between the highest alternative permitted livestock animal unit months of grazing and each alternative level.

TABLE 49. Irretrievable Range Commitment Differences Between Alternatives (MAUMs)

Alternative PA	Alternative					
	A	B	C	D	E	F
High Output	355.2	355.2	355.2	355.2	355.2	355.2
Alt. Output	347.2	338.3	349.0	339.7	350.3	314.2
Irr. Comm.	8.0	16.9	6.2	15.5	4.9	41.0

TIMBER

The alternatives affect the timber resource by the intensities of silviculture applied and the acreage managed for timber production. The effects are characterized by changes in the character and productivity of timber stands. The acreage of suitable timber lands, age class distribution, long-term sustained yield capacity, and the health of the stands are all affected by the alternatives.

Suitability

Using the criteria for determining tentatively suitable timber acres [36 CFR 219.14], 432,361 acres of the Forest were classified as tentatively suitable for timber production. See Chapter 3 for more details concerning suitability determination. Each alternative uses a different proportion of the tentatively suitable acreage to achieve the outputs, goals, and objectives of the alternative. These acres are called suitable acres. Table 50 shows the suitable acres for each alternative.

TABLE 50. Suitable Timber Acres by Alternative

ALTERNATIVE	PA	A	B	C	D	E	F
ACRES	272,174	335,203	360,338	351,697	412,163	277,894	303,306

Alternatives D produces the highest timber outputs over time and uses 95 percent of the tentatively suitable timber. Alternatives C and B produce comparable volumes. These Alternatives use 83 and 81 percent of the tentatively suitable timber respectively. Because of a higher consideration for diversity and wildlife habitat, Alternative B manages more acres to harvest similar volumes.

The Proposed Action Alternative uses the lowest number of tentatively suitable acres and produces volumes higher than those produced by Alternatives E and F. Acres managed are minimized by using higher intensity timber management and by efficiently utilizing steep slope and 0-40 percent slopes.

Alternatives E and F emphasize noncommodity goals and objectives and use a relatively low portion of the tentatively suitable acres, 64 percent and 70 percent respectively. These two alternatives produce the lowest levels of timber outputs. Alternative A continues the present management goals and objectives, using 78 percent of the tentatively suitable acreage.

Long-Term Sustained Yield Capacity

Long-term sustained yield capacity [LTSYC] is the highest nondeclining yield from suitable lands consistent with multiple use objectives of each alternative and a specified management intensity. LTSYC is based on the assumption that the Forest is in a fully managed condition. It is a function of the amount and productivity of suitable acres, the management intensity of prescriptions assigned and scheduled for an alternative, and the Forest's range of stand age classes.

Long-term sustained yield capacity is a measure of the long-term timber productivity resulting from each alternative. The maximum LTSYC for the Forest is 18,729 MCF. Table 51 displays LTSYC by alternative.

TABLE 51. LTSYC (MCF) by Alternative							
Alternative	PA	A	B	C	D	E	F
LTSYC	10,604	15,508	13,770	13,895	16,928	9,699	10,004

LTSYC is a function of the amount of suitable lands, the rate of regeneration harvest, and the intensity of management. Alternative D has the highest long term sustained yield capacity followed by Alternatives A, C, B, PA, F, and E in descending order of timber productivity. These are 90, 83, 74, 74, 55, 53 and 52 percent of the maximum potential productivity. The PA Alternative provides volumes equal the average of past volumes sold. Options are maintained to meet additional demand if future situations change. Productivity is given up in Alternative A and B to achieve early economic gains. Productivity is given up in Alternative F and E to achieve noncommodity output objectives. Productivity is given up in Alternative C to achieve range objectives.

Age Class Distribution

An effect of management alternatives on the timber resource is the distribution of age classes in the suitable timber areas. Uniform distributions of age classes provide higher and more uniform sustained yields, more variety and diversity of habitats, and a higher level of health and vigor in the Forest. Table 52 shows the age class distributions of the alternatives. Equal acreages in the first six classes would be considered ideal from a timber stand- point.

TABLE 52. Age Class Distribution at End of Period B (Suitable Acres)							
Age Class	Alternatives						
	PA	A	B	C	D	E	F
1-20	60,428	66,443	69,446	58,104	62,124	40,473	44,595
21-40	24,005	22,889	21,715	48,793	57,926	36,810	26,786
41-60	35,064	60,477	45,395	67,847	77,775	42,249	22,752
61-80	60,880	75,260	77,436	74,726	82,518	49,524	62,118
81-100	55,339	55,045	81,607	52,613	65,421	36,400	25,961
101-120	11,588	38,276	34,555	29,996	47,635	24,382	13,673
121-140	1,109	1,402	1,482	906	996	556	2,513
141-160	2,385	664	2,008	2,446	4,056	1,285	7
161-180	384	458	234	567	366	481	0
181-200	132	1,226	122	3	4	0	634
200+	20,860	13,063	26,338	15,696	13,342	45,734	103,911

Alternatives A and D provide the best age class distribution when compared to the hypothetical ideal. They provide less than the ideal acreage in the 21-40 and 101-120 age classes. Alternatives A and D also have the least acreage retained in the 200+ age classes. This acreage was given up to balance the other age classes. From a timber management viewpoint, Alternative F provides the least desirable distribution of the first six age classes. It does, however, provide the highest level of acres in the 200+ age class. This acreage provides old growth habitat to meet wildlife objectives. Alternatives PA, B, C, and E are similar in providing age class distribution and fall between A and D and F in effect. The 21-40 and 101-120 age classes acreages are less than ideal in all alternatives.

Growth Rate

The President's Revised Statement of Policy, PL 96-514(12/12/80), requires that the productivity of suitable forested land be maintained or enhanced to minimize inflationary impacts of wood product prices and to permit a net export of forest products by 2030. The Statement recognizes that it will take time to achieve these goals, thus, it requires that by Period 5, growth on commercial timber lands be brought to and maintained, where possible, at 90 percent of the long-term sustained yield capacity (LTSYC).

Long-term sustained yield capacity of wood fiber output is equivalent to growth over time. Growth in Period 5 and LTSYC are compared in Table 53. If timberland does not have a high growth rate by Period 5, it will take much longer to achieve harvest levels or outputs at the LTSYC level and the Statement of Policy goal will not be achieved.

TABLE 53. Average Annual Long-Term Sustained Yield Compared to Achievement of 90 Percent of Potential Growth at Period 5

	PA	A	Alternative				
			B	C	D	E	F
GROWTH (MCF)	9,755	13,309	13,417	12,772	15,760	9,159	10,194
LTSYC (MCF)	10,604	15,508	13,770	13,895	16,928	9,699	10,004
% OF LTSYC	92	86	97	92	93	94	102

All alternatives except Alternative A achieve the desired level of growth at or above 90 percent of LTSYC. Alternative A was very close.

Health and Vigor of Stands

Health and vigor of timber stands is affected by the age class distribution, intensity of management, mix of tree species, susceptibility to insect and disease attack, and rate of growth. The alternatives vary in their impact on overall health and vigor of the timber stands. All prescriptions are silviculturally integrated with the needs to control dwarf mistletoe.

Even though Alternatives E and F have some of the highest growth rates within the managed stands, overall they will have the lowest health and vigor of stands. These alternatives provide for timber harvest on relatively few acres and maintain the largest acreage in old growth. Few steep slope areas will be managed for timber. Over time, these areas not managed will become slow growing and less healthy. They will also become more susceptible to insect and disease attack.

Alternative PA is very similar to Alternatives E and F in the effects on stand health and vigor. More of the suitable acres will be managed in lower age classes so insect and disease problems within the suitable timber would be lower. Over time, the tentatively suitable timber not managed will become slow growing and less healthy. Large acreages will remain unmodified, so the risk of insect and disease epidemics will increase with time.

Alternative A will be the next lowest in stand health and vigor. The growth rate of suitable acres in this alternative is the lowest of all alternatives. The alternative also brings under management the fourth lowest number of the tentatively suitable acres. Age class distribution at the end of the planning horizon is good, but it is reached by delaying the removal of existing overstories in the first decade. Some of these existing overstories are overmature and are susceptible to insect and disease attack.

Alternatives B, C, and D will provide the highest stand health and vigor. In these alternatives, stands are managed intensively. Mature overstories will be removed in the shortest period of time and stands will be regenerated the soonest. To provide for range developments in the first decade, Alternative C stands will not be regenerated as fast as the other alternatives, but stands will still be put under management relatively quickly compared to other alternatives. Because of the relatively low occurrence of old growth stands, and the high proportion of suitable acres being put under intensive management in a relatively short time period, the susceptibility to insect and disease attack is low.

Irretrievable Commitment

Two types of outputs indicate the relative differences in irretrievable commitment between the alternatives. Differences in Allowable Sale Quantity between the highest alternative and the other alternatives indicates the opportunities lost over the first decade. The differences between the highest long-term sustained yield capacity and the long-term sustained yield capacity of the other alternatives indicates long-term opportunities lost.

Table 54 and Table 55 show the irretrievable timber commitments. Allowable sale quantity is shown in thousands of cubic feet per year and the long term sustained yield capacity is shown in millions of cubic feet per year.

TABLE 54. First Decade Allowable Sale Quantity (MCF) Commitment Differences Between Alternatives

	Alternatives						
	PA	A	B	C	D	E	F
Highest Output	13551.6	13551.6	13551.6	13551.6	13551.6	13551.6	13551.6
Alt. Output	8336.5	8288.7	9807.3	11127.5	13551.6	7186.8	3486.6
Irr. Comm.	5215.1	5262.9	3744.3	2424.1	0.0	6364.8	10065.0

TABLE 55. Irretrievable LTSYC (MMCF) Commitment Differences Between Alternatives

	PA	A	B	C	D	E	F
Highest LTSYC	16.9	16.8	16.9	16.9	16.9	16.9	16.9
Alt. LTSYC	10.6	15.5	13.8	13.9	16.9	9.7	10.0
Irr. Comm.	6.3	1.4	3.1	3.0	0.0	7.2	7.9

FUELWOOD

The current supply of fuelwood consists of green (live) pinyon and juniper, dead standing pinyon and juniper, and dead and down wood of all species, including activity generated slash from timber harvests. Standing dead conifers, excluding pinyon-juniper, are retained for wildlife snags except in fuelbreaks or in areas where public safety is required.

Total annual demand for fuelwood is estimated to be 22,000 MBF in the first period and 60,000 MBF by the fifth period. Percent satisfaction of fuelwood demand from all sources in Periods 1 and 5 is: PA (54/28 percent); A (35/6 percent); B (47/25 percent); C (42/17 percent); D (45/18 percent); E (32/17 percent); F (28/14 percent).

None of the alternatives are able to provide the expected use level of fuelwood. Because of the emphasis placed on the fuelwood issue in the PA Alternative, it comes the closest to meeting the needs.

The fuelwood made available through timber harvest is considered a secondary benefit of that harvest. The timber objectives of each alternative affect the fuelwood production. Alternatives B, C, and D provide relatively high timber outputs and proportionately high activity generated fuelwood outputs. The other alternatives provide lower levels. Over time, as stands are regenerated, there is less defective material in the timber volume harvested and the fuelwood volumes become proportionately less. Alternative D gets stands under management the soonest, and therefore produces proportionately less activity fuelwood over time.

Wildlife, domestic grazing, and fuelwood harvest objectives of the alternatives affect the amount of pinyon and juniper fuelwood harvested.

Alternatives A and F provide the lowest amounts of pinyon and juniper fuelwood. The objective of Alternative F is to provide relatively high levels of wildlife habitat. The fuelwood provided is the result of providing wildlife openings in pinyon and juniper stands and efforts to provide additional diversity in the pinyon and juniper areas. Alternative A output levels are a result of continuing current direction on only the accessible pinyon and juniper areas.

Alternatives D and C provide the next lowest amounts of pinyon and juniper fuelwood. In these alternatives, the fuelwood output is primarily a result of the high commodity emphasis. In Alternative C, fuelwood is harvested to open up pinyon and juniper canopies and provide more available forage for domestic livestock. In Alternative D, fuelwood is also made available through activities that provide domestic livestock forage, and to help resolve the fuelwood issue.

Alternative E provides the second highest amounts of pinyon and juniper fuelwood. In this alternative, the fuelwood is made available by prescriptions that harvest fuelwood to provide wildlife openings and additional diversity in pinyon and juniper areas and to open pinyon and juniper canopies so that additional forage can be made available for wildlife and domestic livestock.

Alternatives PA and B provide the highest amounts of pinyon and juniper fuelwood. In these alternatives, the harvest is generated as a result of an objective to address the fuelwood issue.

Irretrievable Commitment

The irretrievable commitment of the fuelwood resource can be measured by comparing the total fuelwood outputs in decade 1 to the outputs from the highest alternative. Table 56 displays the results of this analysis. Outputs are expressed in thousands of board feet.

TABLE 56. Irretrievable Fuelwood (MBF) Commitment Difference Between Alternatives

Alternative	PA	A	B	C	D	E	F
High Output	11887.3	11887.3	11887.3	11887.3	11887.3	11887.3	11887.3
Alt. Output	11887.3	7734.5	10409.8	9235.5	9844.6	6965.9	6297.5
Irr. Comm.	0.0	4152.8	1477.5	2651.8	2042.7	4921.4	5589.8

PLANT AND ANIMAL DIVERSITY

Impact of alternatives affect both the proportion and distribution of plants and animals. Changes in levels of diversity are contingent on both the management levels for individual resources and the integration of diversity needs between resources. Alternatives which accelerate levels of timber and fuelwood harvest, livestock grazing, habitat burning, etc., increase early successional stages. Alternatives which increase fire suppression, reduce timber harvest, reduce grazing use, etc., increase later successional stages.

The distribution of both early and late successional stages has a direct effect on diversity. Large areas characterized by a single vegetation type and or large areas characterized by either a low or a high successional stage is normally detrimental to diversity of both plants and animals. With the exception of specialized island habitats, management for a mix of vegetative types and successional stages in small areas normally increases diversity.

Habitat and animal diversity are specifically affected by the level of wildlife planning, improvement, and coordination included under each alternative. Plants and animals with very specific habitat requirements are affected by levels of threatened and endangered (T & E) habitat improvement and levels of overall wildlife coordination. Existing levels of threatened and endangered species habitat would be maintained under all alternatives. Differences in alternative levels of recovery for threatened and endangered species will effect levels of animal diversity overtime.

A primary factor effecting diversity within wilderness areas is the level of prescribed fire utilized to restore natural habitat diversity. Levels of prescribed fire from unplanned and/or planned ignitions in wilderness ecosystems vary by alternative.

Expected effects of each alternative on plant and animal diversity by the end of the planning horizon are displayed in Table 57. The expected percentage of effect is based on factors effecting both the amount and distribution of existing diversity components. Age class distribution in suitable timber areas is shown in Table 52.

TABLE 57. Effect on Plant and Animal Diversity by End of Planning Horizon

Activity	Alternative						
	PA	A	B	C	D	E	F
Prescribed Burning in Wilderness Zones	+15	-10	+10	-15	-20	+10	+25
Restoration of High Successional Stages in Zones Where Currently Limited	+15	-5	+10	-10	-10	+20	+25
Restoration of T&E Habitats	+8	+3	+11	0	0	+20	+60
Levels of Integrated Habitat Management	+10	-5	+10	-20	-25	+30	+80

Alternative F results in the greatest increase in plant diversity. It also provides the most stable levels of native animal diversity. Management emphasis includes a relatively high level of restoring natural diversity in wilderness areas and improving the mix of high successional stage habitats where deficient in nonwilderness zones. Age class distribution in lower

successional stage timber stands (age 1 to 120) shows a proportionally higher number of acres in the 61 to 80 year class. This would provide high levels of cover habitat with suitable timber areas. Old growth would be well distributed within both suitable and unsuitable timber areas.

Alternative E also provides a substantial increase in plant and animal diversity. Restoration of natural diversity in wilderness will occur along with increases of high seral stages where deficient. Rates of diversity increase are below those in Alternative F. All age classes, including old growth, are well distributed within the suitable timber area. This contributes to a high level of diversity within these areas.

The PA results in a moderate overall increase in diversity. Through the use of fire, more natural levels of diversity will be restored to the wildernesses. Diversity will increase within timber management areas as more even ageclass distribution is established. Old growth habitats will remain dispersed within the suitable timber areas. Timber will be managed by stands so that age classes will be distributed within relatively small areas. Fire will be used to maintain or increase diversity in the portions of the Forest that are not managed for timber. A high level of old growth habitat will be maintained in the many areas that are not managed for timber. Non-game species that require high seral stages will continue to thrive within these areas.

Alternative B would also result in a moderate overall increase in diversity. A relatively high percentage of the tentatively suitable timber acres would be managed. Age class distribution will increase within the areas managed for timber. Old growth habitats will be maintained at a relatively high level and will be distributed throughout the managed areas. Timber will be managed in small stands so that age class distribution can be increased within relatively small areas. Fire will be used to maintain or increase diversity outside suitable timber areas. Some relatively large old growth areas would be maintained but not as many as in the Proposed Action Alternative.

Alternative A results in a slight decrease in both plant and animal diversity, as trends towards late successional stages continue in wilderness areas. Trends towards disproportionate levels of early successional stages will continue in nonwilderness zones. This alternative provides relatively even age class distribution in suitable timber stands 1 to 120 years old. The 21 to 40 year age class is proportionally lower than other classes. While the age class distribution in the 1 to 120 year old stands would improve, distribution will become poor. Relatively large blocks of one age class stands would be common.

Alternatives C and D result in significantly reduced levels of vegetative diversity as relatively large areas are managed toward early successional stages outside wilderness and late successional stages within wilderness. Forest wide age class distribution in the 1 to 120 year old stands will improve but as in Alternative A, the distribution would become poor. Because of the emphasis on high timber outputs within a constrained budget, coordination efforts would be low and timber would be managed to produce high timber yields at low costs. Relatively large blocks of one age class stands would be common. Animal diversity will also be significantly reduced as habitat capabilities for all but very tolerant species decline.

Irreversible and Irretrievable Resources

Changes in both plant and animal diversity can be reversed depending on the extent of change and availability of species for restoration. Zones where early successional stages are limiting can normally be reversed in very short time frames. Reversing zones where late successional stages are limiting could require very long time frames depending on the vegetation type (160 to 190 years). In some cases, restoration of late successional stages following prolonged periods of disturbance may be irreversible. The effects of reduced diversity on natural selection, gene flow, and other ecological processes is irretrievable. An indication of levels of irretrievable losses are indicated in Table 57. Alternatives with a positive diversity index result in a lower risk of irreversible loss and lower level of irretrievable loss. Alternatives with a negative index involve a high risk of irreversible resource loss and higher level of irretrievable losses to the Forest ecosystem.

SOIL AND WATER

The environmental consequences resulting from each alternative varies by management prescription. The major effects on the soil and water resource are the changes in soil productivity and hydrologic functions. Changes in soil productivity can produce long-term changes in Forest resources such as timber production, forage production, wildlife production, and recreational opportunities. Changes in hydrologic function may also affect streamflow characteristics. Each of the alternatives affect soil productivity and hydrologic function in different ways.

Major indicators of soil productivity are soil loss and watershed condition. A watershed is considered to be in unsatisfactory condition if a significant proportion of the watershed is experiencing soil losses in excess of tolerance or if the hydrologic function is unstable. Hydrologic function is the ability of a watershed to sustain favorable condition of water flow (minimum flood runoff and maximum base flows). If the soil losses and hydrologic function of a watershed exceed tolerance levels, soil productivity is lost. Soil loss and hydrologic function are greatly influenced by vegetative ground cover. Any management activity (logging, grazing, road construction) that affects ground cover conditions will influence losses or gains in soil productivity.

Soil Loss

Soil loss is estimated by the Universal Soil Loss Equation (USLE). Estimated soil loss values are not considered absolutes, but are used as a relative comparison of the effects of alternatives on the soil resource. USLE utilizes components of soil type, vegetative cover, management practices, and terrain to quantify soil loss. Several input models were developed to estimate the impacts of management activities such as grazing, timber harvest, and road construction and maintenance. Soil loss estimates for a specific site can also be compared to a tolerance soil loss value to determine the relative impact on the site. Estimates which exceed tolerance values are considered unacceptable.

Estimates of soil loss are displayed in Table 58. Total soil loss for the 50-year planning period and the change in the average annual soil loss by the fifth decade are shown in Table 59. These figures depict the average annual soil loss from timber, range, and road activities and are based upon a current average annual soil loss of 18,789 million tons.

TABLE 58. Estimated Average Annual Soil Loss (Based on timber harvest, grazing, road construction and road maintenance) - M Tons

Period	Alternative						
	PA	A	B	C	D	E	F
1	18,068	18,706	18,147	18,520	18,673	17,995	17,500
2	16,061	16,752	15,851	15,531	15,878	15,294	15,030
3	14,742	14,966	14,925	15,018	15,160	14,415	14,400
4	14,827	14,971	15,045	15,079	15,238	14,721	14,710
5	14,809	14,952	14,993	15,046	15,216	14,804	14,750

TABLE 59. Estimated Total Soil Loss (M Tons) - 50-Year Planning Period - Estimated Changes in the Average Annual Soil Loss by the Fifth Decade

	Alternative						
	PA	A	B	C	D	E	F
Total Soil Loss (50 Year Period)	785,507	803,470	789,610	791,940	801,650	772,290	763,900
Changes in Average Annual Soil Loss by Fifth Decade (%)	-3,980 (-21.2%)	-3,837 (-20.4%)	-3796 (-20.2%)	-3,743 (-19.9%)	-3,573 (-19.0%)	-3,985 (-21.1%)	-4,039 (-21.5%)

Currently, the Gila National Forest produces an estimated average annual soil loss of 5.6 tons per acre. Grazing currently has the greatest impact on sediment yields. This is because grazing occurs on more acreage than any other activity. Other activities such as timber harvest, road construction etc. can result in greater impacts in individual areas. Annual soil losses decrease 19 to 21.5 percent over the five decade period under all alternatives. This decrease results in an average annual soil loss reduction of 1.1 to 1.2 tons per acre. The alternatives are ranked in order from the most soil loss reduction to the least soil loss reduction: F, E, PA, A, B, C, and D. Soil losses decrease

under all alternatives as watershed condition improves. These increases in watershed condition are created by reconstruction and surfacing of roads, closure of unneeded travelways, treatment of low and moderately low condition watersheds, watershed improvements, and balancing livestock use with capacity.

Difference in soil losses from range are insignificant between alternatives by the third decade due to a balance between permitted livestock numbers and forage capacity. Past this point, soil loss differences are due primarily to the level of timber harvest activity and road construction. Differences between alternatives in decades one and two are created by the management techniques used in balancing the permitted numbers and capacity and by differences in the acres logged and the miles of roads constructed and reconstructed.

Through the continuation of improved range management practices and by continuing to reduce the difference between capacity and permitted livestock use, all alternatives continue the existing trend of reducing soil loss over time. In Alternative A, and D, more acres go to low and current range intensities. In these prescriptions, the gap between capacity and permitted numbers remains wider for the first two decades and results in less soil loss reduction. When alternative are ranked by their contribution to reduction in soil loss from grazing, and from watershed improvement activities, Alternative F results in the most improvement followed by Alternatives E, PA, B, C, D, and A (most to least improvement).

Unlike the soil loss from grazing that decreases over time, soil loss from timber and road construction increases in some alternatives. Alternatives D, C, B, and A result in long term timber and road construction soil loss levels above the existing levels. Implementation of Alternatives PA, E, or F would result in reductions over time.

Soil loss from off road vehicle use is relatively constant under all alternatives and is considered insignificant as compared to the losses from timber harvests, roads, and range allotments. This is also true of soil losses from wildland fires and mineral entries. Both can have a significant localized effect on soil losses, but the delivery efficiencies and volume of soil loss are insignificant in comparison to the losses from timber, range, and roads. Under Alternative E, wildland fires consume three times more acreage than any other alternative and could potentially produce a proportionate amount of soil loss.

Watershed Condition

Currently an estimated 1,166,000 acres (35 percent) of the Gila National Forest are classified as unsatisfactory watershed condition. These acres currently have ground cover conditions where the effective cover is below the tolerance level, resulting in lost soil productivity. This results in ten out of the 20 designated watersheds (530,800 acres) on the Forest classified as unsatisfactory. If a watershed is classified as unsatisfactory, it does not mean every acre of that watershed is in an unsatisfactory condition. It does mean that majority of the 1,166,000 acres are located within the unsatisfactory watershed and require a combination of indirect and direct watershed restoration treatments.

Because grazing occurs on a larger percent of the Forest than any other activity, most improvements in watershed condition result from the indirect effects of balancing permitted livestock numbers with forage capacity and improving cattle distribution (water development, fencing, salting). Travelway closure, road reconstruction to current standards, surfacing and improved maintenance of roads also benefit watershed condition. Range management improvement in the last 20 years has resulted in improved watershed condition. The trend to more watershed acres in satisfactory condition is continued in all alternatives. Some alternatives result in higher levels of satisfactory acres than others. (Table 60)

It is assumed that the recovery of satisfactory watershed acres will coincide with the recovery of satisfactory range acres, but will require approximately 50 years longer. This is due to the time frames required for the vegetation to recover and provide adequate watershed protection. This results in approximately 80 percent recovery in Alternatives PA, B, C, D, and E; approximately 70 percent recovery in Alternative A and approximately 83 percent recovery in Alternative F, by the end of the fifth decade.

TABLE 60. Estimated Watershed Acres in Satisfactory Condition (Million Acres)

Period	Alternatives						
	PA	A	B	C	D	E	F
*0	2.18	2.18	2.18	2.18	2.18	2.18	2.18
1	2.18	2.18	2.18	2.18	2.18	2.18	2.20
2	2.33	2.21	2.33	2.31	2.29	2.36	2.40
3	2.47	2.21	2.47	2.45	2.43	2.50	2.56
4	2.59	2.27	2.59	2.57	2.55	2.62	2.70
5	2.71	2.35	2.71	2.69	2.67	2.74	2.84

* - Currently there are an estimated 2,176,200 acres in satisfactory watershed condition.

All alternatives show an improvement by the end of the second decade. This recovery continues into the third decade in Alternatives PA, B, C, D, E, and F, but not Alternatives A. In Alternative A, improvement is slowed by a reduced level of range management which will result in the deterioration of range improvements.

Watershed condition will continue to improve in all alternatives through the fifth decade with Alternative F resulting in the greatest recovery, followed by Alternatives E, PA, B, C, D, and A.

Other resource activities such as timber harvesting, road construction, ORV use, mining activities, and wildfires can have localized effects on watershed condition. Timber harvesting impacts will be controlled by the implementation of "Best Management Practices".

Irreversible Commitment

All alternatives reduce the irreversible loss of soil productivity over time. Some irreversible loss will, however, continue. Alternatives F, E, PA, and B will minimize losses in soil productivity through increased improvement in watershed condition over time. Since Alternatives C and D provide for balancing permitted grazing with forage capacity in the second decade, these alternatives result in only slightly higher irreversible soil productivity loss. Alternative A increases satisfactory watershed condition acreage the slowest and therefore have the highest irreversible soil production loss.

Flood Hazard

All alternatives reduce the hazards of floods by adherence to the State's "Best Management Practices" to prevent blockage of water courses, maintain adequate ground cover, and by posting areas of public use to warn of potential hazards.

Water Yield

Currently, the Gila National Forest produces an estimated average annual water yield of 337,963 acre feet. None of the alternatives significantly change water yield (all less than one percent). Decrease in water yield is the result of continued timber growth in wilderness areas and timber components. They are also a result of improved grazing management which correlates with improved watershed conditions.

Approximately 351,000 acres of the Forest have the potential for overstory removal of ponderosa pine and mixed conifer. Water treatments such as timber overstory removal (patch cuts) can produce increased sediment yields due to the surface disturbance and reduction of evapotranspiration (increased flows). Overstory removal can increase water yields which can increase the risk of localized downstream flooding. Due to the limited number of treatable acres and the offsetting decrease in water yield due to timber growth, increases in downstream flooding, and sediment yields should be insignificant.

A majority of the precipitation falling on the Forest fails to reach perennial streams, especially in lower elevations, and serves to recharge the Mimbres Valley, Hot Springs, Rio Grande, Lower Rio Grande, and the Gila - San Francisco ground water basins. No alternatives significantly affect the Gila National Forest contribution to ground water recharge.

Irretrievable Commitment

None of the alternatives result in significant irretrievable commitments of the water resource.

CULTURAL RESOURCES

Cultural resources on the Forest are wide-spread and considered of high value with important management needs. The cultural resource management program on the Forest consists of five elements. These are: inventory, restoration, nomination, protection and interpretation.

Restoration consists of the repair and stabilization of sites and features of sites that have been damaged as a result of natural or man-caused disturbances. Nomination refers to the administrative process of completing and submitting forms for nomination of sites or groups of sites to the National Register of Historic Places (NRHP). Protection of cultural resources involves marking site boundaries for avoidance by earth disturbing activities, monitoring of cultural resources to detect damage, and law enforcement activities. Interpretation of cultural resources includes both on-site and off-site opportunities. On-site interpretive programs include the use of guides, signed trails or site-specific brochures. Other interpretive opportunities include displays or exhibits at museums and Forest Supervisor's or District offices, the presentation of popular talks or literature and the presentation of professional talks and publications.

Inventory includes the identification and documentation of cultural resource sites on the lands inspected. Inventory will be conducted to provide clearance for undertakings, to provide information for research projects and to provide non-undertaking related training for Forest para-professional personnel.

The following three tables display the cultural resource objectives, risks and benefits for each of the alternatives:

Table 61 - Objectives for Cultural Resources

OBJECTIVES	ALTERNATIVES						
	PA	A	B	C	D	E	F
INVENTORY {Acres/Year}	12,000	11,800	14,000	14,000	18,000	12,500	12,000
PROTECTION {Sites/Year}	80	40	60	60	80	60	100
INTERPRETATION {Opportunities/Year}	10	4	10	4	4	4	15
RESTORATION {Sites/Year}	2	0	2	0	0	0	2
NOMINATIONS {Sites/Year}	4	4	4	4	4	4	8
OVERALL BENEFIT RANK	5	1	6	3	4	2	7

THE ALTERNATIVES ARE RANKED WITH 7 BEING THE HIGHEST BENEFIT AND 1 THE LOWEST RANKING. THIS TABLE IS BEST ON THE BEST AVAILABLE INFORMATION. THE INFORMATION WILL CHANGE WHEN THE FOREST COMPLETES THE CULTURAL RESOURCES MANAGEMENT ASSESSMENT.

Cultural resources inventory of the equivalent of 100% of 125,000 acres had been accomplished by the end of 1985. This survey acreage represents 39% coverage of 318,000 acres of total project areas. Timber surveys accounted for 63% of the 125,000 acres surveyed, 16% of the acres were for range projects, 9% for lands/land uses, 5% for roads/engineering, and 5% for fuels management. Table 61 displays the estimated benefits to cultural resources for the seven alternatives. Annual inventory acres averaged 11,800 acres/year in the ten year period between 1976-1985. Inventory totals will vary by alternative depending primarily on the number of acres that will be logged by the end of the fifth planning decade for each alternative. Staffing levels for the para-professional training program and academic research projects will also affect inventory accomplishments.

Protection estimates are highest for alternatives PA, D and F. Protection estimates for D reflects the high level of disturbance due to timber activities, while the estimates for PA and F reflect a mix of protection from project-related disturbance and a greater emphasis on law enforcement patrols.

Interpretation opportunities will be greatest under alternatives PA, B and F because of a greater emphasis on amenities. Restoration estimates are low for all alternatives. Nominations efforts reflect minimum levels for all alternatives except F.

Table 62 - Comparison of Risks to Cultural Resources

ACTIVITIES	ALTERNATIVES						
	PA	A	B	C	D	E	F
Timber	6	4	3	2	1	5	7
Fuelwood	1	5	2	4	3	6	7
Range	4	6	3	1	5	2	7
Roads	6	4	2	3	1	7	5
OVERALL RISK	6	4	2	3	1	5	7

Despite the inventory and protection requirements in all alternatives, the potential for damage to cultural resources exists. Relative risks for various activities are displayed in Table 62. Alternatives are ranked in order from highest (1) to lowest (7) risk. The risks of damage to cultural resources are directly related to the levels of projected ground-disturbing activities under each alternative. Risks to cultural resources due to vandalism and pot-hunting will be the same for all alternatives except PA and F, where greater emphasis will be placed on protection patrols. As explained above, all alternatives vary in relation to their benefits to cultural resources and their risks. Table 63 summarizes benefits and risks.

Table 63 - Benefit/risk Comparison

	ALTERNATIVES						
	PA	A	B	C	D	E	F
Average Risk	6	4	3	2	1	5	7
Average Benefit	5	1	6	3	4	2	7
Overall Rank	6	3	5	2	1	4	7

An overall benefit/risk rank for each alternative is displayed in Table 63, based on a comparison of the estimated benefits and risks developed in Tables 61 and 62. Alternatives F, PA, B, E, A, C and D are listed in order from most to least desirable for the overall management of cultural resources.

**Irreversible
Commitment**

Any loss of cultural resource sites as a result of vandalism, pilfering, natural deterioration, or as a result of ground disturbing management activities are irreversible. All alternatives will result in some irreversible effects of cultural resources. Alternatives D, C, A, E, B, PA, and F are listed from most to least irreversible commitment of the cultural resource.

MINERALS

Impact on mineral prospecting, exploration, and development are difficult to predict since the timing and location of work are controlled by the private sector's response to world-wide supply and market prices.

The alternatives affect minerals by varying the acreage available for exploration and leasing, accessibility, and restrictions on operations.

Development of locatable minerals--those minerals covered by the 1872 Mining Law such as gold, silver, lead, zinc, uranium, and high quality limestone--are governed by regulations requiring submittal of a Plan of Operation to limit environmental impacts. The greatest activity has occurred on the Silver City, Glenwood, and Black Range Districts. The greatest potential for locatable minerals is on these same districts.

All alternatives provide for timely review and approval of Plans of Operation for locatable mineral activity. Operating Plans provide for protection of surface resources to the extent possible under the regulations. They provide for minimizing impacts and reclamation of areas after exploration or mining has ceased. Mining claims are contested where claims are suspected of being invalid.

There are approximately 28,600 acres of administrative minerals withdrawal and 790,000 acres of wilderness closed to mineral entry. Since the wilderness acres are closed by the 1964 Wilderness Act, no further discussion of these acres will be made in this section. The Federal Land Policy and Management Act requires Federal agencies to review their administrative withdrawals and establishes a time table for the work to be completed. The Forest is scheduled to have its withdrawal evaluation completed on or before 1989. The withdrawals have been reviewed, and the areas where the existing withdrawals will be retained or new withdrawals proposed are displayed in Table 64. The withdrawal acres that are recommended for retention are displayed in Table 65.

TABLE 64. Mineral Withdrawals for Locatable Minerals [Acres recommended for withdrawal retention or new withdrawals rounded to nearest 100]

AREA TYPE	PA	A	B	Alternative			
				C	D	E	F
Developed Recreation Sites	1500	1500	500	500	1500	1500	3500
Dispersed Recreation Sites	1700	1700	0	0	1700	1700	7100
Administrative	16300	16300	2000	2000	16300	16300	18000
New Withdrawal Proposals	2500	0	0	0	0	0	2500
Total	22000	19500	2500	2500	19500	19500	31100

TABLE 65. Mineral Withdrawals for Locatable Minerals [Acres recommended for withdrawal revocation]

AREA TYPE	PA	A	B	Alternative			
				C	D	E	F
Developed Recreation Sites	2000	2000	3000	3000	2000	2000	0
Dispersed Recreation Sites	5400	5400	7100	7100	5400	5400	0
Administrative	1700	1700	16000	16000	1700	1700	0
Total	9100	9100	26100	26100	9100	9100	0

The Proposed Action Alternative and Alternatives A, D, and E propose revocation of 9100 acres of current withdrawals. These acres of withdrawals are abandoned administrative sites, withdrawals along major highways to protect scenic values, or developed recreation sites where little or no known potential exists for mineral development. Alternatives B and C propose revocation of nearly all existing withdrawals, including Fort Bayard. These alternatives will retain only those withdrawals where the value of the surface resource investments; i.e., developed recreation sites and administrative sites, is high or where there are unique physical attributes that cannot be duplicated elsewhere in the Forest; i.e., electronic sites, unique riparian habitats, etc. Alternative F proposes to retain all existing withdrawals, add approximately 20 acres for the Copperas electronic sites and add 2,480 acre to the existing scenic withdrawals in the Gila Corridor along State Highway 15. Even though the PA Alternative recommends addition of the same new withdrawals as proposed in Alternative F, the net withdrawals on the Forest will be less than the existing acreage.

Leasable minerals are generally oil and gas [energy minerals]. Because of the emphasis on energy independence, substantial activity can be expected in this area. Prospecting for and exploration and development of leasable minerals are at the discretion of the Federal government. Based upon review of the potential impacts, the Forest recommends lease approval with stipulations to protect the environment to the Bureau of Land Management [BLM]. With the participation of the Forest Service, the BLM will administer the lease exploration and development. Recommendations for availability of lands for leasing and stipulations necessary to protect surface resources are based on the degree of protection needed on each area to meet multiple use objectives.

All alternatives provide for processing of energy mineral lease applications in a timely manner and aiding the BLM in administration of on-the-ground activities.

Table 66 summarizes leasing recommendations. Areas available for leasing are based on visual quality levels and proximity to developed recreation sites, administrative facilities, or Fort Bayard.

TABLE 66. Mineral Leasing Recommendations - M Acres

Lease Category	Alternative						
	PA	A	B	C	D	E	F
Nonwilderness							
Standard 1/							
NR	1773	1773	2378	2378	1773	1773	0
IN	617	617	44	44	617	617	1773
Limited 2/							
SO	44	44	0	0	44	44	657
W/OSO	0	0	0	0	0	0	0
Special areas 3/							
Standard							
NR							
IN	15	0	23	23	15	15	0
Limited							
SO	4	23	0	0	4	4	23
W/OSO	0	0	0	0	0	0	0

1/ Standard: NR - Lease with no restrictions; IN - Lease with information notice detailing restrictions.

2/ Limited: SO - Lease with surface occupancy limited; W/OSO - Lease without surface occupancy.

3/ Fort Bayard, Developed Recreation Sites and Administrative Sites.

There are no known areas on the Forest that have been demonstrated to be favorable for production, development, exploration, and prospecting of leasable minerals. There are areas that are theoretically favorable for these activities. Specifically, the area within a 10 to 12 mile radius of Quemado Lake is geologically and theoretically favorable for oil and gas deposits. Also, the area six to ten miles north and south of State Highway 59 between Beaverhead and Winston is geologically and theoretically favorable for oil and gas deposits. Fort Bayard is theoretically favorable for leasing of hardrock minerals; however, approximately 2356 acres of private land required by the War Department in the early 1900s are the only acres open to hardrock mineral leasing. Fort Bayard, though closed to mineral entry under the 1872 mining law, is open to leasing for leasable minerals under the 1920 leasing law.

All acres in the Forest are open to leasing except for the 789,386 acres of classified wilderness. Table 66 displays under what constraints leasing will be qualified. The PA Alternative and Alternatives D and E will provide for lease with standard lease restrictions, 1,773,294 acres of areas with a visual quality level of modification or maximum modification; lease, with a lease information notice, 613,340 acres with a visual quality level of partial retention and 4,000 acres of recreation sites and administrative sites that have mineral withdrawals proposed for revocation; lease with limited surface occupancy, 44,258 acres with a visual quality level of retention; lease with an information notice, the 15,000 acre Fort Bayard area; and lease, with limited surface occupancy, developed recreation and administrative sites with withdrawals proposed for retention. Alternative A is similar to the Proposed Action Alternative and differs only in that all 8,000 acres of recreation sites (i.e., those proposed for revocation), plus the 15,000 acre Fort Bayard area, will be leased with limited surface occupancy. Alternatives B and C propose to lease 2,387 acres with a visual quality level of maximum modification without any additional restrictions other than those contained in the basic lease; lease, with an information notice, 44,258 acres with a visual quality level of retention; and lease, with an informational notice the 15,000 acre Fort Bayard

area and 8,000 acres developed recreation and administrative sites. Alternative F proposes to lease, with an informational notice, 1,773,294 acres with visual quality levels of modification or maximum modification; lease, with limited surface occupancy, 657,340 acres with a visual quality level of partial retention 15,000 acre Fort Bayard area and 8,000 acres of developed recreation and administrative sites.

Common variety minerals such as stone, sand, gravel, and pumice may be sold at the discretion of the Forest under a permit system or provided free to Federal, State, and local agencies for road and highway construction and maintenance. All alternatives provide common variety minerals within management requirements designed to protect soil, water, and visual resources. No differences exist between alternatives for common variety minerals.

Reserved or outstanding mineral rights or active mines will not be affected by alternatives. The level of access provided will vary by alternatives. Alternative F is the most restrictive alternative and access costs will be high to protect Forest surface resources. Alternatives B and C are the least restrictive and access costs will be low in that only minimal requirements to protect surface resources be required. The Proposed Action Alternative and Alternatives A, D, and E will impose access restriction needed to protect and enhance surface resources and will involve moderate costs. Access development under authority of the 1872 Mining Act and the 1920 Leasing Act will be the same.

Irreversible and Irretrievable Commitment

Irreversible commitment of the mineral resource occurs when the mineral is extracted. Irretrievable commitment of the mineral resource would occur if mineral withdrawals resulted in the loss of production of some mineral. Since the Forest Service does not control the extraction minerals, neither of these can be predicted.

FACILITIES Roads

The road system is managed to provide cost effective, safe transportation for both industrial and recreation users. There are currently 686 miles of arterial and collector roads, 1,308 miles of local roads and 2,720 miles of travelways. The alternatives affect the road system by changing the mileage of roads constructed, reconstructed, or closed and the level of maintenance.

Timber harvest generates most road construction and reconstruction activities. Timber purchasers receive credits on the stumpage price by construction or reconstruction of roads needed to access the sale areas. Timber road mileage will vary as the harvest volume varies. Table 67 summarizes the miles reconstructed or constructed in each alternative.

TABLE 67. Average Annual Arterial, Collector, and Local Roads Construction and Reconstruction -Miles

		PERIOD									
		1		2		3		4		5	
ALT.	ROAD TYPE	Con	Recon	Con	Recon	Con	Recon	Con	Recon	Con	Recon
PA	Timber	14.8	32.9	10.6	31.6	8.5	22.2	11.6	31.2	11.6	31.4
	Nontimber	1.0	1.8	1.7	1.8	1.1	2.8	1.9	3.9	1.5	2.6
A	Timber	25.2	19.7	20.1	39.0	18.8	28.8	14.0	26.7	4.8	71.3
	Nontimber	1.3	1.0	1.1	2.0	1.0	1.5	0.7	1.4	0.2	3.8
B	Timber	19.2	32.0	23.6	25.3	16.9	33.6	21.0	92.0	17.1	47.5
	Nontimber	1.0	1.7	1.2	1.3	0.9	1.8	1.1	4.8	0.9	2.5
C	Timber	7.5	29.9	31.7	44.6	13.2	48.2	25.6	60.7	14.5	44.8
	Nontimber	0.4	1.6	1.7	2.4	0.7	2.5	1.3	3.2	0.8	.4
D	Timber	3.1	20.7	0.6	6.8	16.3	4.5	38.7	65.7	18.7	59.0
	Nontimber	0.7	1.1	2.1	1.9	0.8	3.4	2.0	3.5	1.0	3.1
E	Timber	5.0	13.2	17.0	44.6	11.2	0.3	21.0	54.4	5.4	13.9
	Nontimber	0.3	0.7	1.0	2.3	1.1	1.6	1.1	2.9	0.2	0.7
F	Timber	3.7	6.0	23.7	9.2	17.9	1.6	19.0	3.5	6.5	4.0
	Nontimber	0.2	0.3	1.3	2.6	0.9	2.2	1.0	2.8	0.3	1.3

TABLE 68. Arterial, Collector, and Local Roads Constructed by the end of Period 5 - Miles

	Alternatives						
	PA	A	B	C	D	E	F
New Miles Constructed	643	872	1,029	974	1,340	633	745
Constructed Miles That Would Remain Open	226	610	360	780	1,075	253	260

Table 68 shows the miles of roads that would be constructed for the various alternatives and how many miles of these roads will remain open. The number of miles closes after timber management activities are complete vary with the objective of the alternative.

The number of travelways comprises a special transportation problem. Approximately 50 percent of the 2,720 miles of travelways is not needed for management purposes. Many of the roads are poorly located and are causing resource damage such as soil erosion. Table 69 displays the planned obliteration of the unneeded travelways. All alternatives except A will close the 1360 miles of unneeded travelways by the end of the third period.

TABLE 69. Travelways Closed--Miles

Alternative	Period		
	1	2	3
PA	800	280	280
A	0	0	0
B	450	450	500
C	100	630	630
D	100	630	630
E	600	600	160
F	800	280	280

The primary road maintenance cost on the Forest is associated with arterial and collector roads. This road system is essentially in place, so none of the alternatives significantly increase the arterial and collector road maintenance responsibility. Most of the road construction on the Forest would be local roads used to harvest timber. The timber purchaser is responsible for the maintenance of local haul roads during the time that timber is being harvested. Local roads that remain open after timber harvest activities are complete would be maintained at a low level. Alternatives with the highest open local road mileage would increase the maintenance responsibilities the most.

Maintenance of the existing and proposed roads is a key to protecting the investments, as well as providing for safe and enjoyable use while reducing vehicle maintenance costs. Current maintenance levels on numerous system roads are inadequate. It is not cost effective to maintain these roads at higher levels until grade, drainage, and surfacing are brought to standard. Approximately 273 miles of level 4 and 336 miles of level 3 roads need reconstruction to meet current standards and prevent resource damage. Several of the arterial roads and most of the collector roads need resurfacing to protect the investment and reduce vehicle maintenance. Road maintenance is summarized in Table 70 by maintenance levels. Levels are defined in the glossary.

TABLE 70. Annual Road Operations and Maintenance - Miles						
		PERIOD				
ALT.	MAINT. LEVEL	1	2	3	4	5
PA	L 1-2	145	115	90	95	90
	L 3-5	1150	1350	1400	1450	1500
	Open Trways. Not Maintained	1920	1640	1360	1360	1360
	Other Rds. Not Mtn. to Stan.	759	829	634	829	634
	Total:	3974	3734	3484	3534	3584
A	L 1-2	30	30	30	30	30
	L 3-5	610	610	610	610	610
	Open Trways. Not Maintained	2720	2720	2720	2720	2720
	Other Rds. Not Mtn. to Stan.	1544	1684	1824	1924	1964
	Total :	4904	5044	5184	5284	5324
B	L 1-2	120	130	150	150	150
	L 3-5	1200	1225	1250	1275	1300
	Open Trways. Not Maintained	2270	1820	1320	1320	1320
	Other Rds. Not Mtn. to Stan.	744	799	814	869	904
	Total:	4334	3974	3534	3614	3674
C	L 1-2	120	130	150	150	150
	L 3-5	1200	1225	1250	1275	1300
	Open Trways. Not Maintained	2620	1990	1360	1360	1360
	Other Rds. Not Mtn. to Stan.	734	959	1024	1219	1314
	Total:	4674	4304	3784	4004	4124
D	L 1-2	120	130	150	150	150
	L 3-5	1200	1225	1250	1275	1300
	Open Trways Not Maintained	2620	1990	1360	1360	1360
	Other Rds. Not Mtn. to Stan.	704	689	784	1089	1224
	Total:	4644	4034	3544	3874	4034
E	L 1-2	120	130	150	150	150
	L 3-5	1200	1225	1250	1275	1300
	Open Trways Not Maintained	2120	1520	1360	1360	1360
	Other Rds. Not Mtn. to Stan.	694	729	734	799	794
	Total:	4134	3604	3494	3584	3604
F	L 1-2	105	110	130	130	130
	L 3-5	1000	1015	1030	1045	1060
	Open Trways Not Maintained	1920	1640	1360	1360	1360
	Other Rds. Not Mtn. To Stan.	849	945	1004	1059	1064
	Total:	4803	4103	3791	3991	4059

Road maintenance in the Proposed Action Alternative makes a 71 percent increase in the first period over the Current Alternative and a 137 percent increase in periods 2 thru 5. Alternatives B, C, D, and E provide for a 104 percent increase in all periods. Alternative F provides for a 67 percent increase over all periods.

The road maintenance level in all alternatives except the Proposed Action results in an increase in roads not maintained to standard over time. Many of the roads not maintained to standard, however, are local roads that do not receive much use and are designed to be functional with low maintenance. As a result, road maintenance for Alternatives PA, B, C, D, E, and F; in conjunction with the reconstruction of substandard arterial, collector, and local roads, will enable the Forest to provide cost effective, safe access for public and industrial use. Alternative A will result in acceleration of the deterioration, which will progress to the point that roads will become impassable to motor vehicles and will be closed. Accelerated deterioration of the roads will also increase the amount of resource damage.

Alternative PA will result in the least miles of constructed roads. Many parts of the Forest will remain inaccessible to vehicles. Local roads constructed for timber sales and not needed for protection or administration will be closed after the timber is harvested. The decrease in open road density outside

wilderness will provide for less motorized dispersed recreation opportunities. Access for minerals exploration and removal will be enhanced within areas managed for timber, but access will remain limited in many of the more remote portions of the Forest. The overall maintenance condition of the roads will increase during the first period resulting in higher safety on arterial, collector and local roads. Conditions will continue to improve in periods 2 thru 5. The number of miles of roads that would not be maintained to standard would be reduced over time.

Alternative A will provide limited increased access to the Forest as a result of the newly constructed and reconstructed roads. The maintenance activities on the roads will remain below prescribed standards and will result in further deterioration of the roads system. Low maintenance levels will result in restricted access for recreationists, management, and industrial users.

Alternatives B, C, and D will result in increased access to the Forest by means of the reconstructed and constructed roads. Most arterial and collector (main roads) will be maintained to prescribed standards. Access for recreationists, management, and industrial users will be at a safe level. Access for minerals exploration and removal will be increased.

Alternative E results in the second to the least miles of new roads. Arterial and collector road will be maintained to standard. User comfort and safety on these system roads will be increased. If local roads conflict with wildlife objectives or are not needed for administrations, they will be closed. The limited increase in the miles of road that remain open will restrict motorized access into some of the more remote portions of the Forest. Hunting access will not be appreciably increased. As a result, concentration may become more of a problem over time. Industrial use such as minerals exploration would be limited by the road system. Management access would be restricted due to limited mileage.

Alternative F would provide some additional access because of constructed roads. Most arterial and collector roads would be maintained to standard. Because of the number of roads closed to meet wildlife objectives, management as well as recreational and industrial users would have restricted access to some parts of the Forest. Access would be more distributed than in the PA Alternative.

In addition to the Forest road system, the State of New Mexico has 352 miles of Federal and State routes within the National Forest for which they have jurisdiction and maintenance responsibilities.

Trails

The trail system provides administrative access and recreation opportunities. There are currently 1441 miles of trails on the Forest. The alternatives affect the trail system by changing the mileage of trail construction, reconstruction, and level of maintenance. Table 71 displays the miles of construction and reconstruction during the five periods.

Alternatives	Periods				
	1	2	3	4	5
PA	104	105	103	116	130
A	10	10	10	10	10
B	30	38	46	53	63
C	10	10	10	10	10
D	10	10	10	10	10
E	72	82	91	101	112
F	126	139	152	166	180

Substandard trails (trails not maintained to prescribed maintenance levels) account for 1,183 miles of the existing trails system. There are four trail maintenance levels on the Forest. Level 1 is resource protection only. Level 2 opens the trail by removal of windfalls and high safety hazards. Level 3 adds brushing out of overhanging and side materials as well as tread repair in major damage areas. Level 4 adds major tread repair to the activities in the lower levels. This level provides access for most recreationists. Table 72 displays the effects of the reconstruction and construction in reducing the miles of substandard trails.

TABLE 72. Reduction of Substandard Trails: Present Substandard Mileage - 1183 Miles

Alternatives	Periods				
	1	2	3	4	5
PA	1057	918	766	600	420
A	1173	1163	1153	1143	1133
B	1153	1115	1069	1016	953
C	1173	1163	1153	1143	1133
D	1173	1163	1153	1143	1133
E	1111	1029	938	837	725
F	1057	918	766	600	420

Alternatives A, C, and D will result in a continued deterioration of the trail system. Alternative B results in an improvement in the trail system, with 230 miles of trail improved to standard by the end of the fifth period. Alternatives PA, E, and F will result in a marked improvement in the trail system, with as much as 65 percent of the substandard trails improved to prescribed maintenance standards.

Alternative PA will result in the upgrading of approximately 65 percent of the substandard trails to prescribed standard. Maintenance will increase on the newly reconstructed and constructed trails to the extent that the constructed standard will be maintained. User access will be enhanced by providing a wide range of user experience opportunities.

Alternatives A, C, and D will result in a further deterioration of the trail system. Many trails will become impassable and will eventually be closed. The opportunities for the casual recreationist will be greatly reduced with only very limited mileage being maintained at prescribed maintenance levels. Opportunities for the primitive user will increase.

Alternative B will result in approximately a 25 percent reduction in substandard trails. This will result in a limited increase in the Forest access to the casual user. Trails that have been reconstructed will be maintained at the reconstructed level, thus increasing slightly the number of miles maintained at the prescribed levels.

Alternative E will reduce the substandard trail mileage by approximately 40 percent. This will result in a corresponding increase in the number of miles that are maintained to prescribed levels. Increases to the prescribed maintenance levels will increase the opportunities for the casual user to have Forest access. There will also be a corresponding increase in the number of miles of trail that will be available for those desiring a primitive experience.

Alternative F will reduce the substandard miles by 65 percent. This will greatly increase the opportunities to gain access to the Forest. Trails will be available that provide opportunities for those desiring casual or primitive experiences. Those miles of trail that are reconstructed or constructed will be maintained to their prescribed standards. Enhanced access will result in a greater dispersion of recreational users, which is highly desirable in the Wilderness areas.

Facilities

Administrative facilities such as offices, dwellings, crew quarters, warehouses, and lookouts are used in the administration of the Forest. Many of these facilities have reached obsolescence and are not cost effective to maintain. Reconstruction and replacement are required. Costs for construction and reconstruction of administrative facilities are displayed in Table 73.

TABLE 73. Annual Costs for Facilities Construction and Reconstruction-M Dollars							
Alternatives	PA	A	B	C	D	E	F
All Periods	155	155	155	179	179	155	151

Priorities for construction and reconstruction are: 1.) Quemado Office, 2.) Reserve Office Rehabilitation, 3.) Negrito Work Center Phase IIA, 4.) Negrito Work Center Phase IIB, 5.) Gila Center Well, 6.) Reserve Admin. Site Well and Sewage, 7.) Grant County Fire Base Interior Roads, and 8.) Mimbres Barn Expansion.

Alternatives PA, A, B, E, and F will result in the reconstruction and replacement of obsolete facilities by the end of the fifth period. Alternatives C and D will result in the reconstruction and replacement of the obsolete facilities, with emphasis given to access and interaction with the Forest users by the end of the fifth period.

All major dams on the Forest are operated and maintained by the New Mexico Game and Fish under use agreements.

LANDS AND SPECIAL USES Lands

Land related activities support other resource management and provide administration for approximately 627 special use permits. All alternatives have support costs built in to provide needed work. There are no significant differences in the lands budget between alternatives.

Land Exchange and Acquisition

All alternatives provide for acquisition and disposal of lands by exchange donation or purchase. The acres classified as base in exchange or desirable for acquisition do not change by alternative. Maps are available at the Forest Supervisor's Office for review. Base in exchange lands total 9580 acres, while land desirable for acquisition totals 17,210 acres.

Lands suitable for acquisition under the Land and Water Conservation Fund have a high recreation potential. These total 3,820 acres and are identified by the Mimbres, Gila River, and Wall Lake Recreation Acquisition Composites.

Right-of-Way Acquisition

Approximately 327 miles of rights-of-way are needed to meet multiple-use objectives on the Forest. Rights-of-way (ROW) are acquired directly by the Forest or in cooperation with State and County agencies. All alternatives project the need for 19 miles of ROWs per decade.

Utility Corridors and Windows

Existing extra high voltage utility rights-of-way are established as corridors in all alternatives. The only major corridor present is where Tucson Electric's three 345 circuits cross the western edge of the Forest. This corridor is fully utilized by the three Tucson Electric 345 KV lines.

The Western Regional Corridor Study for the State of New Mexico did not identify any new corridor requirements for the time period 1980-1990. However, an Arizona-New Mexico area bulk transmission corridor (i.e. railroad) was identified as a potential corridor for the time period between 1990 to 2020. Future plan updates will address this issue as needed.

El Paso Electric Company has submitted an application to the Bureau of Land Management for a single circuit 345 KV transmission line from Red Hill, New Mexico. The environmental analysis for this project has identified several alternative routes across the Forest. The resulting impacts and the potential need to amend the Forest Plan will be evaluated in the environmental impact statement being prepared by the Bureau of Land Management.

Since some future corridors may not have been identified in the corridor study. The Forest will evaluate requests for additional utility corridors when the need arises.

Summer Homes

Five summer homes will be retained under all alternatives. No higher or better use has been identified for the land area they occupy. Should 50 percent or more of any structure be destroyed or receive major damage through fire or natural causes, the permit will not be renewed. No additional summer home permits will be issued.

PROTECTION Fire Management

Fire Management on the Forest is affected by the alternatives in the amount of fire risk and fire hazard created under each alternative. See the glossary for definition of risk and hazard.

Fire risk is primarily a function of human activity on the Forest. Alternatives providing more recreation and wildlife opportunity and more access to the Forest will generally have a higher level of fire risk. Alternative F provides the most recreation and wildlife recreation visitor use days and has the highest fire risk. Alternative F is followed by Alternatives E, B, PA, A, D, and C in decreasing order of fire risk.

Fire hazard is primarily a function of the amount of fuel in the Forest from natural and human processes. Natural fuels increase in forests as they grow older and trees die from insects and disease. Timber sales and other timber related activities are the main activities where human actions add to the amount of fuels, thereby increasing the fire hazard. Fuel build-up from human activity is partially mitigated by fuel treatment in all alternatives. See Table 74. However, not all fuel created by human activity is treated. Therefore, alternatives having the highest levels of timber harvest also have the highest fire hazard levels. Alternative D has the highest fire hazard, followed by Alternatives C, B, A, PA, E, and F in decreasing order of fire hazard.

TABLE 74. Average Annual Acres Of Activity Fuels Treated
Alternative

Period	PA	A	B	C	D	E	F
1	6,282	5,566	12,622	11,797	14,482	9,787	5,477
2	8,162	5,571	12,700	13,417	15,162	10,777	7,782
3	9,508	6,644	13,537	12,106	14,324	8,791	7,677
4	9,502	7,713	12,988	13,453	14,915	10,797	8,000
5	9,595	8,991	13,640	13,826	15,224	10,824	7,873

The combination of fire risk and hazard contributes to the probability of damaging fires burning in the Forest. Fire occurrence probability is mitigated by level of fire protection provided. The level of fire protection can be measured by the fire protection funds included in each alternative. Table 75 shows the average annual fire protection and suppression costs by alternative.

TABLE 75. Average Annual Fire Protection and Suppression Costs - M Dollars

Cost Type	PA	A	B	C	D	E	F
Protection	2,200.0	2,324.3	2,457.8	2,250.7	2,444.3	2,164.3	2,434.9
Suppression	950	909	983	1,757	940	1,162	956

When fire risk, hazard, and protection level are considered together, a fire probability can be estimated for each alternative. This fire probability is expressed in estimated average annual acres burned. Table 76 shows the estimated average annual burned acreage for each alternative.

TABLE 76. Average Annual Acreage Burned

Alternative	PA	A	B	C	D	E	F
Acres	4,500	5,100	4,000	5,000	4,000	13,000	4,000

Alternative E has the greatest impact from fire because it has a high risk factor, and while it is low in hazard it also provides the least fire protection. The remaining alternatives rank A, C, PA, B, D, and F in decreasing order of fire loss.

Integrated Forest Protection

Population build-ups which have a potential to reach epidemic proportions are treated through cultural, biological, and chemical means. Special attention is given to all forested districts for western spruce budworm, bark beetles, and dwarf mistletoes. Range caterpillars and grasshoppers are monitored by the Animal and Plant Health Inspection Service, USDA.

Silvicultural practices utilized to manage epidemic populations include thinning, harvesting, increased utilization of marginal material, and use of slash as fuelwood. Unutilized slash is treated by burning, lopping, and scattering. Pesticides or biological controls such as viruses or bacteria are utilized for epidemics. These agents may be used alone or in combination with each other and cultural practices to achieve control. The Chapter 4 section on health and vigor of stands indicates the alternatives' relative susceptibility to insect and disease infestations.

Dwarf mistletoes in the ponderosa pine and mixed conifer types are a problem on of the Forest. The parasitic plant lowers tree vigor, causing significant reduction in growth, increased mortality, and increased susceptibility to bark beetles. Control is accomplished in all alternatives by removal of infected trees during intermediate and regeneration stages of a shelterwood cut to prevent dispersal of seed to the understory or regenerated stand. These sanitation harvests may create openings which resemble small clear cuts until

regeneration is established. All alternatives provide the opportunity to reduce losses to dwarf mistletoe on suitable timber lands as stands are brought under management. The alternatives that treat the most acres silviculturally are most effective in controlling insects and disease. Alternatives that treat the most acres are listed in descending order of acre treated: D, B, C, A, F, E and PA.

Insect infestations are monitored in the Wildernesses to identify infestations which have the potential to spread to adjoining areas. Infestations have not presented a threat in the past, but with Wildernesses containing large acreages of mature timber, a potential for future infestations exists. Control efforts within a wilderness are limited to biological or chemical methods and require approval of the Regional Forester.

Irretrievable

Since the prediction of insect epidemics is not possible, irretrievable effects of the various alternatives cannot be predicted. Wood fiber from suitable lands lost to insects and disease which is inaccessible for salvage harvest is considered insignificant.

RIPARIAN

Plant and animal components of riparian ecosystems are primarily affected by habitat coordination, habitat improvement and livestock management. Levels of recreation in riparian zones, timber harvest in upper watersheds along with watershed stabilization activities can also affect riparian ecosystems.

Livestock and wildlife use which becomes concentrated in riparian zones can decrease riparian stand structure, composition, and bank stability. Levels of timber harvest, habitat burning and livestock grazing in upper watersheds can also effect runoff potentials and tend to increase early successional stages in riparian zones.

Habitat improvement projects such as protection fencing, planting, seeding, stream improvement, and watershed stabilization activities increase stand structure, composition, and habitat carrying capacity of riparian zones.

Levels of habitat and watershed coordination with timber harvest, allotment management, developed recreation activities, and road location have a direct effect on the level of maintenance and improvement in riparian ecosystems.

A comparison of the relative effect of each activity on riparian condition, composition stand structure, and habitat carrying capacity is presented in Table 77.

TABLE 77. Relative effect of each activity on Riparian Stand Structure, Composition, Condition, and Habitat Carrying Capacity by the end of the fifth period.

Activity	Change in riparian condition by Alternative						
	PA	A	B	C	D	E	F
Livestock management	+10	-10	+10	-25	-20	+25	+100
Timber harvest levels adjacent to riparian zones.	-5	-10	-10	-20	-25	0	0
Riparian habitat coordination and improvement.	+11	+3	+12	-25	-25	+15	+200
Watershed protection levels	+10	-20	+10	-20	-20	+15	+30

Alternative F results in the greatest improvement in riparian stand structure, composition, condition, and habitat carrying capacity. Improvements in riparian and fish habitats would be rapid and continuing. Alternative E provides the next best improvement, however, it is constrained by the levels of riparian improvement projects and coordination with activities affecting riparian condition. All riparian areas would be in satisfactory or better by the end of the third decade.

The PA and B Alternatives result in some improvement in existing riparian condition and moderate increase in habitat diversity. All riparian areas would be in satisfactory or better condition by the end of the fourth decade.

Alternative A results in a slight decline in existing riparian condition and habitat diversity as activities affecting stand structure and composition outweigh levels of coordination and improvement. The regional riparian goal of having all riparian areas in satisfactory or better condition by 2030 would not be met.

Alternatives C and D result in a significant decline in riparian condition and habitat diversity. Regional riparian goals would not be met.

**Irreversible and
Irretrievable
Resources**

Recovery of riparian ecosystems can be accomplished depending on the extent of change and availability of species for restoration. In some cases restoration of late successional stage species, following prolonged periods of disturbance, may be irreversible. The effects of reduced riparian diversity on species found in riparian zones is irretrievable. The overall effect on natural selection, gene flow, and other ecological processes cannot be readily quantified. Indications of levels of irretrievable loss can, however, be extrapolated from Table 77. Alternatives with more positive changes result in a lower risk of irreversible loss and a lower amount of irretrievable loss. An opposite relationship occurs for alternatives with negative changes. Although not quantified specifically for riparian zones, an irretrievable loss in wildlife recreation opportunity occurs under alternatives with decreased habitat capability. This loss is included with the overall effects of each alternative on wildlife recreation visitor days displayed in Table 44.

**ECONOMIC AND SOCIAL
CONSIDERATIONS**

**Economic Efficiency
Analysis**

National Forest Management Act (NFMA) regulations [36 CFR 210.12] require extensive analysis of economic efficiency in the formulation, estimation of effects, and evaluation of alternatives. In addition, the Congressionally revised Resource Planning Act Statement of Policy requires National Forests be managed to maximize net social and economic contributions to the Nation's well-being in an environmentally sound manner.

Present net value (PNV) was chosen as one measure of economic efficiency. PNV is the discounted benefits less the discounted costs. Present net value measures the net economic benefits to the public for all resources which have a market value or which were given an assigned value in the planning process.

Maximization of present net value was an objective of each alternative modeled in FORPLAN. Each alternative, therefore, represents the most cost efficient combination of management prescriptions based on the goals and objectives of the alternative.

Present net value was calculated by FORPLAN based upon costs for labor, capital, and materials used to support the management direction of each alternative and upon revenue generated from the production of goods and services. Costs included budgets for emergency firefighter funds, timber user costs, and permittee user costs.

Revenues included market prices for timber, range, developed recreation, and water. Assigned prices included prices for dispersed, wildlife, and wilderness recreation. Revenues from mineral production were not included in FORPLAN since production is controlled by the private sector. Also, mineral revenues would be the same for each alternative and would, therefore, not change the relative ranking of each alternative.

Present net value is not a complete measure of economic efficiency because only the market or assigned prices or outputs for which prices can be estimated are counted as benefits while all costs are included. As a consequence, those alternatives with a relatively greater focus on priced outputs are characterized by the highest PNVs. Differences in the quality of resource management that may accompany changes in levels of outputs are not reflected in the assumed prices.

Since not all costs and benefits can be priced in the analysis, present net value was not the only index used to develop, compare, and evaluate alternatives. Alternatives were evaluated as to how well they maximized net public benefits. Net public benefits (NPB) is an overall expression of the value to the nation of all outputs and positive effects [benefits] less all

associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index. Alternatives having the highest present net value may not always provide the highest net public benefits when nonpriced benefits and costs are considered. Chapter two provides more detail.

The Maximum Present Net Value (PNV) Assigned Value Benchmark is structured to provide the greatest assigned and/or market monetary benefits for the costs incurred. This benchmark shows the most economically efficient combination of costs and benefits without specific regard for the protection of resources and the provision of integrated multiple-use management. The Maximum Present Net Value Assigned Benchmark was not considered in detail, but instead was intended to be used for comparing the present net values of alternatives considered in detail. There were no constraints placed on the Maximum Present Net Value Assigned Benchmark. As constraints are added to meet the objectives and goals of the alternatives considered in detail, the PNV will decrease. Comparing the present net values of the alternatives to the Maximum PNV Assigned Benchmark provides a measure of the financial tradeoff or opportunity cost of an alternative.

Table 78 displays benefit, cost, and present net value tradeoffs from the Maximum PNV Assigned Benchmark as well as the benefit/cost ratios for the alternatives. Revenues from the production of minerals are not included in the calculation of present net value. A detailed comparison of tradeoffs is summarized in the Present Net Value Trade-off section of Chapter Two.

TABLE 78. Cumulative Present Value Benefits, Present Value Costs and Present Net Value—Millions 1980 Fourth Quarter Dollars at 4 Percent Discount Rate

	Max PNV Assigned	PA	A	B	C	D	E	F
Benefits	612.7	474.3 (-138.4)	444.5 (-168.2)	491.7 (-121.0)	431.7 (-181.0)	455.8 (-156.9)	499.2 (-113.5)	603.9 (-8.8)
Costs	253.2	234.1 (-19.1)	252.2 (-1.0)	297.6 (+44.4)	285.2 (+32.0)	289.7 (+36.5)	255.6 (-2.4)	262.7 (+8.9)
PNV	359.5	240.2 (-119.3)	192.3 (-167.2)	194.1 (-165.4)	146.5 (-213.0)	166.1 (-193.4)	243.6 (-115.9)	341.2 (-18.3)
B/C Ratio	2.41	2.03	1.76	1.65	1.51	1.57	1.95	2.29

The Max PNV Assigned Benchmark is included as a reference point. Differences in parenthesis are dollar changes from the Max PNV Assigned Benchmark.

Benefits and Costs

Total annual benefits and costs are summarized for each alternative for Periods 1 through 5 in Table 79. Total benefits are market and assigned values benefits generated by all the priced outputs throughout the planning horizon. [See Appendix B for display of benefit prices.] Total costs are the anticipated budgetary appropriations and are broken into capital investment and operation and maintenance (O&M). All values are shown in thousands of dollars per year.

TABLE 79. Financial Summary of Alternatives - Thousand Dollars Per Year

Period	Benefits/Costs	Alternative						
		PA	A	B	C	D	E	F
1	Total Benefits	16,410	15,620	16,710	16,360	17,690	15,800	16,320
	Total Costs	10455.5	10,127	11,650	10,525	11,164	9966	9135
	FS Costs (Budget)	7863	7798	9230	7983	7968	7706	7728
	Capital Investments	1241	1555	1479	1004	794	1089	1118
	Operation & Maintenance	6622	6243	7751	6979	7174	6617	6610
	Other Costs/Investments	2592	2329	2420	2542	3196	2260	1407
2	Total Benefits	16,770	15,550	17,390	15,630	16,580	17,040	19,910
	Total Costs	11,542	10,162	11,872	12,676	12,621	10,566	11,084
	FS Costs (Budget)	8441	7799	9544	9130	9231	8300	8835
	Capital Investments	1366	1550	1721	1859	1863	1485	1879
	Operation & Maintenance	7075	6248	7823	7271	7368	6615	6986
	Other Costs/Investments	3101	2363	2328	3546	3390	2266	2249
3	Total Benefits	18,810	17,560	19,680	16,640	17,050	20,020	24,240
	Total Costs	11,539	10,664	12,200	11,688	11,677	10,079	11,049
	FS Costs (Budget)	8662	8189	9355	8336	8389	7953	8839
	Capital Investments	1305	1658	1490	1249	1137	1229	1745
	Operation & Maintenance	7357	6331	7865	7087	7252	6724	7094
	Other Costs/Investments	2877	2475	2845	3352	3288	2126	2210
4	Total Benefits	20,350	18,720	20,460	17,090	17,770	21,990	27,980
	Total Costs	12,056	10,038	12,347	12,514	12,146	10,730	11,466
	FS Costs (Budget)	8425	7584	9731	8762	8712	8293	9301
	Capital Investments	1290	1177	1807	1561	1437	1442	2098
	Operation & Maintenance	7135	6407	7924	7201	7275	6851	7203
	Other Costs/Investments	3631	2454	2616	3752	3434	2437	2165
5	Total Benefits	22,090	21,030	22,410	18,400	19,020	24,300	31,060
	Total Costs	12,658	10,115	13,777	12,469	11,591	11,371	11,318
	FS Costs (Budget)	8485	7669	10,663	8259	8365	9215	9480
	Capital Investments	1283	1150	1752	1142	1041	1372	2210
	Operation & Maintenance	7202	6519	8911	7117	7324	7843	7270
	Other Costs/Investments	4173	2446	3114	4210	3226	2156	1838

"Other" costs include fire fighting fund, timber purchaser credit, and permittee investment.

Returns to the
Treasury and
Counties

Cash receipts collected for timber, grazing, and recreation uses are returned to the U.S. Treasury. The majority of the receipts returned to the U.S. Treasury come from timber sales. All receipts were determined based on the 1980 dollar for all outputs generated on the Forest for each alternative. Each year the Forest Service returns 25 percent of the gross revenue to the states for disbursement to counties based on the percentage of the National Forest acreage within the county. The counties within the Gila National Forest planning area include Apache County in Arizona and Catron, Grant, and Sierra Counties in New Mexico.

Counties also receive payments in lieu of taxes. This program is administered by the Bureau of Land Management, Department of Interior. The program is dependent on annual Congressional appropriations rather than Forest receipts and, therefore, the payment program is not included in the analysis.

Table 80 displays estimated U.S. Treasury and "25 percent fund" returns to the counties. The estimates are based on returns generated by timber harvest, grazing use, and developed recreation use. These figures are for comparative purposes only. As estimates, the figures are not a contract between the Forest Service and the counties to provide the amount of funding displayed. Changes in market prices and willingness to purchase by the private sector can cause widely fluctuating revenues.

TABLE 80. Estimated Average Annual U.S. Treasury Revenues and Returns to Counties Measured in Thousands of Dollars

	Alternative						
	PA	A	B	C	D	E	F
Period 1							
Treasury	3597	3663	4248	4894	5738	3324	1887
County	899	915	1062	1223	1434	831	471
Period 2							
Treasury	3613	3632	4349	4759	5589	3373	3272
County	903	908	1087	1190	1397	843	818
Period 3							
Treasury	3496	4209	4600	4709	5260	3341	3107
County	874	1052	1150	1177	1315	835	777
Period 4							
Treasury	3289	4609	4095	4580	5312	3106	3142
County	822	1152	1023	1145	1328	777	785
Period 5							
Treasury	3269	5107	4322	4744	5305	3232	3050
County	817	1276	1080	1186	1326	808	762

Employment and Income

Each alternative would have a unique effect on employment, population, and total income patterns within the zone of influence of the Gila National Forest. Differences are mostly a function of output levels that would be produced under each alternative. Of primary importance to the regional economic situation is timber/sawmills and tourism (including wildlife recreation). Because the majority of the impact resulting from timber activity is confined to the northern portion of the Forest, a separate economic analysis was conducted for Apache County, Arizona and Catron County, New Mexico. These two counties were included in the total area of influence as well.

A computer input/output model (IMPLAN) was utilized to determine the effects of the alternatives for a variety of industry sectors. As explained above, a separate analysis was prepared for the two primary timber counties of the Forest. The industry sectors selected for analysis include:

Sawtimber	Timber products
Personal residential fuelwood	Personal nonresidential fuelwood
Commercial fuelwood	Residential picnicking
Nonresidential picnicking	Residential camping
Nonresidential camping	Residential water recreation
Nonresidential water recreation	Residential dispersed nonmotor rec.
Nonresidential disp. nonmotor rec.	Residential dispersed motor rec.
Nonresidential disp. motor rec.	Big game hunting
Small game hunting	Nongame wildlife
Residential fishing	Nonresidential fishing
Cattle grazing	Government expenditures

These particular industry sectors are the sectors most likely to be affected by Forest Service management decisions.

The input/output model is based on data developed in 1977. Employment predictions are reasonably accurate since there has been no substantial change in technology in most sectors since 1977. One exception could be employment changes as a result of reductions in permitted grazing. The livestock industry has been very depressed in the last few years. Projected livestock reductions could make some livestock operations uneconomical. Because there is no method of determining the point where individuals can no longer operate, the resulting loss of employment may not be accurately included in the analysis. Income figures are adjusted to equal fourth quarter 1980 dollar values to be compatible with other dollar values provided in the document. The model is a projection of employment and income potential only. There is no assurance that these exact levels of employment and income will occur.

A summary of the analysis of the IMPLAN model runs is displayed in Table 81. The 1977 Base Year column represents total employment and income existing in the impact area. Alternative A represents the impact area employment attributed to activities on the Gila National Forest. The values identified for the other alternatives reflect changes from current management as a result of activities scheduled by the various alternatives.

TABLE 81. Summary of Alternatives by Employment, Income and Population at Mid-Point of Period 1

Sub-areas	1977 Base Year	Alternative						
		A	PA	B	C	D	E	F
<u>Apache, AZ and Catron, NM</u>								
Employment	9129	248	-5	+47	+73	+177	-23	-138
Income-MM\$	201.3	6.5	-.13	+1.24	+1.92	+4.65	-.60	-3.62
Population	48,600	1323	-27	+251	+389	+942	-121	-734
<u>All Counties</u>								
Employment	17,915	1656	-5	+77	+95	+194	-4	-34
Income-MM\$	518.0	31.56	-.13	+1.89	+2.26	+5.03	-.27	-2.00
Population	84,400	7618	-27	+356	+438	+894	-19	-157

The majority of the impact to the northern counties of Apache, Arizona and Catron, New Mexico is tied to the timber and livestock grazing industries, with lesser impact to retail trade, restaurants and bars, hospitals, and nonprofit organizations.

The increase in the logging and sawmill sector jobs range from 30 in the RPA Alternative to 115 in the Timber Commodity Emphasis Alternative (Alternative D). A decrease in the logging and sawmill sector jobs of 5 for the Proposed Action Alternative, 15 for Alternative E (Range/Wildlife Conflict Resolution) and 90 for Alternative F (Amenity Emphasis Alternative) would be a possibility. Existing jobs dependent on domestic grazing may decrease by 4 in the Proposed Action Alternative. Job increases in retail trade range from three for the Proposed Action Alternative to 18 for Alternative D. Job decreases in the retail trade sector are expected to occur for Alternative E (two) and Alternative F (fourteen). A slight increase in jobs could be expected for eating and drinking places, hospitals, and nonprofit organizations for each alternative except E and F, where similarly slight decreases would be expected.

The "All County" impact area could expect a somewhat different scenario. The logging and sawmill sector will be effected in a manner similar to the northern county impact area. This is because the majority of the timber activities occur within the northern portion of the Forest. Similar to the situation described above, there is a shift away from timber and other forest products in Alternatives E and F. However, with the emphasis on recreation including wildlife recreation, the wholesale, retail, hotels, logging, eating and drinking, and other miscellaneous business sectors show increases in employment, with a corresponding increase in income. The impact is greater for Alternative F as a result of the substantial increase in wildlife recreation RVDs. Increases in wholesale trade varies from no change in Alternative C to 12 additional jobs in Alternative F. The retail trade sector shows increased employment for all alternatives, ranging from five in Alternative C to 20 in Alternative F. Despite the potential net loss of jobs for some of the Alternatives, the overall impact on the "All County" area is not as severe as the impact on the two-county northern area where the economy is closely tied to timber related activities.

In summary, the significant negative impacts on employment due to a reduced timber program would most likely occur in Apache and Catron Counties. The impact of any alternative on the lifestyle of residents of the Gila planning area outside of the two northern counties, would be negligible. This is because of the expected increases in employment that would result from increased recreation (particularly wildlife) activities.

Social Effects

For the area as a whole, the activities and scheduled outputs associated with the alternatives considered in detail could result in some changes in community stability. Commodity alternatives such as Alternative B, C and D would provide for some expention of small communities, particully where timber employment is an important factor. Amenity alternatives such as Alternative F would result in loss of employment in the timber and livestock sectors. This would result in popluation losses in communities dependant on these outputs. Alternative PA and E would result in little overall change. The PA Alternative may result in economic impacts on some individual livestock operators. Communities which currently exhibit a rural or semi-rural atmosphere will not change as a result of Forest management direction proposed by any of the alternatives. Political and social organization will not be affected and land use patterns are not expected to change to any measurable level.

None of the proposed management alternatives is expected to result in any significant change in the present use of the National Forest lands or products by minorities. National Forest opportunities will continue to be equally available to all residents of the United States. With respect to employment, minorities and women are hired directly by the agency or obtain contracts from the agency or work for those who do. The level of hiring under the Equal Employment Opportunity (EEO) Program is directly related to the budget. As funding increases more people are employed directly by the agency and more contracts are issued. Budget reductions cause reductions in public and private sector employment. The alternatives ranked in order of decreasing budgets in Period One are: B, D, C, PA, A, F, and E.

Native Americans

The American Indian Religious Freedom Act requires Federal agencies to evaluate their policies and procedures in consultaion with native leaders of traditional religions in order to determine mitigation necessary to protect and preserve Native American religious practices. Consultation to date has been through the public involvement process with the USDI, Bureau of Indian Affairs - Mescalero Agency; USDI, Bureau of Indian Affairs - Phoenix; Zuni Tribe; White Mountain Apache Tribe; Mescalero Apache Tribal Council; Acoma Pueblo Council; All Indian Pueblo Council (Albuquerque); and the Laguna Pueblo Council. No conflicts have been identified.

All alternatives continue to protect Native American religious sites and areas through cultural resource surveys and contact with the tribes.

OTHER CONSIDERATIONS Comparison with Regional Guide

The Southwest Region through the Regional Guide assigns each Forest a share of the National Resource Planning Act (RPA) Program Targets. Table 82 compares the alternatives to the target assigned for Periods 1 and 5, respectively.

All alternatives fail to meet RPA targets for developed recreation. The RPA targets exceed the benchmark for developed recreation and therefore, is outside the decision space for any alternative.

Mineral operating plans are based on projections of activity from historical data. The number of plans could fluctuate widely because of the speculative nature of mineral development. Land purchase is accomplished with Land and Water Conservation Funds.

TABLE 82. Comparison of RPA Targets with Average Annual Outputs - Periods 1 and 5

TABLE 32. Comparison of Proposed Action Targets with Alternative A Targets for the First and Fifth Periods									
Output Activity	Unit of Measure	Target	Proposed Action PA	Alternative					
				Current A	RPA B	C	D	E	F
FIRST PERIOD									
Recreation									
Dev.	MRVD	557.0	171.4	171.4	171.4	171.4	171.4	171.4	171.4
Disp.	MRVD	662.0	447.5	447.5	447.5	447.5	447.5	447.5	446.1
Trail Const.	Mile	0	8.6	1.0	3.0	1.0	1.0	7.2	12.6
Permit Use	MAUM	336.0	347.3	338.3	349.0	355.2	339.7	350.3	314.2
Timber									
Sales 1/	MMBF	45.0	40.5	36.8	45.0	49.7	60.2	33.6	19.3
Reforest. 2/	Acres	1117	3715	1877	4348	172	422	271	565
TSI	Acres	1980	1585	3069	2119	426	1328	465	760
Minerals	Plans	143							
Fuel Treat.	Acres	5,700	6282	5566	12,622	11,797	14,482	9,797	5,477
Lands Purch.	Acres	686	421	421	686	421	421	421	421
FIFTH PERIOD									
Recreation									
Dev.	MRVD	1239.0	190.8	139.1	275.0	139.1	139.1	190.8	190.8
Disp.	MRVD	750.0	967.9	967.9	967.9	965.6	965.6	967.9	965.9
Trail Const.	Mile	0	13.0	1.0	6.3	1.0	1.0	11.2	18.0
Permit Use	MAUM	354.0	350.0	289.4	354.0	400.0	340.0	380.0	284.5
Timber									
Sales 1/	MMBF	56.0	48.7	59.1	56.0	53.4	60.9	36.5	34.7
Reforest. 2/	Acres	1889	875	118	541	1195	1580	740	0
TSI	Acres	372	1869	2200	2027	590	759	605	392
Minerals	Plans	209							
Fuel Treat.	MAcres	8.5	9545	8991	13640	13826	15224	10824	7873
Lands Purch.	Acres	9	9	9	9	9	9	9	9

1/ Timber sales include sawtimber, products, and fuelwood.

2/ Reforestation includes both artificial and natural means. It is assumed that about 15% of the acres will be by artificial means.

Prime Farmlands, Wetlands and Floodplains

The USDA Soil Conservation Service has identified approximately 20 acres of prime farmlands on the Forest. The acreage is in Management Area 7A near the Gila River and adjacent to the northern boundary of the Management Area. Prime farmlands on and off the Forest will not be substantially impacted by Forest activities.

Floodplains and wetlands are protected in all alternatives by management requirements to meet Executive Orders 11990 and 11988. New roads, camp and picnic areas, and facilities will not be located in these areas and resource management standards and guidelines protect and enhance wildlife habitat, visual quality and water quality. Floodplain "parity" will be maintained in land exchanges.

Energy Efficiency

Estimates of energy consumption by alternative include energy used to provide goods and services. Estimates are based on timber and fuelwood harvest, recreation use, grazing, road and trail construction and reconstruction, and maintenance as well as fire management.

Energy consumption by alternative is mainly a function of the activity level of a given alternative to produce goods and services, and the amount of recreation that is vehicle oriented. In the first decade recreation type or use will not change enough to result in a significant variation energy consumption. In the first decade and fifth decade, the alternative that results in the most energy consumption is Alternative D. The increase is tied primarily to the increase in timber outputs and motorized recreation use. Table 83 summarizes energy consumption by alternatives.

TABLE 83. Energy Consumed - Trillion BTUs

	Alternative					
	PA	A	B	C	D	E
PERIOD 1	10.7	9.7	11.5	14.8	17.7	10.3
PERIOD 5	33.8	43.3	44.4	41.6	48.2	33.2

SUMMARY OF EFFECTS Relationship Between Short-Term Use of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term uses are those that occur on an annual basis while long-term productivity refers to the capability of the Forest to continue producing goods and services by end of Period 5. Short-term uses are timber and firewood harvest, all recreation uses, livestock grazing mineral extraction and special land uses.

Soil and water are the primary resources upon which productivity is based. Short-term uses which damage soils and soil-water relationships impair long-term productivity. Management requirements provide for protection of long-term productivity by requiring short-term uses to mitigate or enhance impacts on soil and water resources.

All alternatives provide for maintenance and enhancement of long-term productivity. All alternatives will have some impairment occurring in localized areas. This will happen as a result of most Forest uses. Over time soil loss is reduced and watershed condition is improved in all alternatives. Watershed condition will improve the fastest in Alternatives F, E, and PA followed by Alternatives B, C, D, and A.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are resource uses which affect the nonrenewable resources--soils, minerals, and cultural sites or areas. These commitments are considered irreversible because the resource has: 1) deteriorated to the point that renewal can occur only over a long time period or at great expense; 2) the resource has been destroyed or removed.

Some irreversible soil loss will occur in all alternatives on localized areas. Alternatives F, will reduce soil loss the greatest followed by alternatives PA, A, B, C, and D. Alternatives C, D, and A will result in the greatest losses. Inservice and outservice use of common variety minerals (i.e. sand, gravel, borrow areas, rock, etc.) is an irreversible commitment of this resource on small isolated areas where this resource occurs. This irreversible commitment is the same for all alternatives.

All alternatives provide for the cultural resource surveys before ground disturbing activities can be undertaken. These surveys are done to protect cultural resources from destruction during the implementation of ground disturbing activities, but even with these surveys the potential for damage exists. Alternatives D, C, A, E, B, PA and F are listed in order from most to least ground disturbance and, therefore, from most to least potential for damage to sites. Natural deterioration will continue in all alternatives.

The protection of known cultural resources from pilfering and vandalism, is the same for all alternatives. This will be high priority with the law enforcement funds available.

Irretrievable resource commitments result from allocation decisions which reduce production or use of renewable resources. Irretrievable commitments represent opportunities foregone for the period the plan is in effect and reflect tradeoffs made to integrate multiple-use considerations or meet budget limitations. Significant irretrievable effects are summarized in Table 84.

TABLE 84. Irretrievable Resource Commitments

	Alternative						
	PA	A	B	C	D	E	F
WILDLIFE RECREATION (THOUSANDS OF RECREATION VISITOR DAYS)							
High Output	422	422	422	422	422	422	422
Alt. Output	317	310	297	284	307	328	422
Irr. Comm.	105	112	125	138	115	94	0
PERMITTED RANGE (THOUSANDS OF ANIMAL UNIT MONTHS)							
High Output	355.2	355.2	355.2	355.2	355.2	355.2	355.2
Alt. Output	347.2	338.3	349.0	355.2	339.7	350.3	314.2
Irr. Comm.	8.0	16.9	6.2	0.0	15.5	4.9	41.0
TIMBER ALLOWABLE SALE QUANTITY (MERCH. VOL. IN THOUSANDS OF CUBIC FEET)							
High Output	13551.6	13661.6	13551.6	13551.6	13551.6	13551.6	13551.6
Alt. Output	8326.6	8288.7	9807.3	11127.5	13551.6	7186.8	3486.6
Irr. Comm.	5525.1	5262.9	3744.3	2424.1	0.0	6364.8	10065.0
LTSY (MILLIONS OF CUBIC FEET)							
High Output	16.9	16.9	16.9	16.9	16.9	16.9	16.9
Alt. Output	10.6	15.5	13.8	13.9	16.9	9.7	10.0
Irr. Comm.	6.3	1.4	3.1	3.0	0.0	7.2	7.9
FUELWOOD (THOUSANDS OF BOARD FEET)							
High Output	11887.3	11887.3	11887.3	11887.3	11887.3	11887.3	11887.3
Alt. Output	11887.3	7734.5	10409.8	9235.5	9844.6	6965.9	6297.5
Irr. Comm.	0.0	4152.8	1477.5	2651.8	2042.7	4921.4	5589.8

Adverse
Environmental
Effects Which
Cannot be Avoided

Unavoidable adverse environmental effects result from managing the land for one set of resource uses at the expense of the use or condition of other resources. Management requirements in prescriptions mitigate most adverse effects by limiting the extent and duration of impacts.

Unavoidable environmental effects are:

Recreation - Temporary disruption in recreation use and changes in types of available recreation opportunities result from timber harvest and related road construction in some alternatives. Increased conflict between some user groups and deterioration of some sites result because of use in excess of capacity and reduced service level management in some alternatives.

Wilderness - In some alternatives, wilderness values are reduced where localized recreation use exceeds capacity and management is at less than standard service level.

Visual quality - In all alternatives, temporary reduction of or modification to visual quality will occur on timber sales, overstory and other vegetative modifications, mineral and mining related improvements and road construction and reconstruction projects. In some alternatives, natural appearing areas will take on a more modified appearance.

Air quality - In all alternatives, temporary reduction of air quality will occur during prescribed burning of activity generated slash and browse habitats.

Wildlife and fish - In all alternatives, temporary displacement of wildlife will occur because of timber sales, range and wildlife habitat improvement, and road construction and reconstruction. Increased disturbance to wildlife is expected where recreation use increases. In some alternatives, increased social and forage competition between elk and livestock may occur. Decreased habitat for climax wildlife species dependent upon old growth coniferous and pinyon-juniper forests will occur because of timber and fuelwood harvest as well as range and wildlife habitat improvement.

Timber and fuelwood - Reduced growth and increased mortality will occur in timber stands not allocated and scheduled as suitable or where other resources are emphasized. Slight reduction in suitable acres will occur because of construction of timber harvest roads. Reduction in pinyon-juniper lands for fuelwood harvest will occur because of range and wildlife habitat improvement.

Soil and water - Lower water quality and levels of soil loss above natural levels will occur because of multiple use activities.

5. List of Preparers

Formulation of the proposed Forest Land and Resource Management Plan and Draft Environmental Impact Statement (DEIS) was completed by a team of Forest specialists and managers. An interdisciplinary approach was used throughout the process, which included a variety of skills. Those persons directly involved in the preparation of these documents include:

NAME & POSITION	EDUCATION & EXPERIENCE	INVOLVEMENT
<u>Anderson, Bruce L.</u> <u>Forest Wildlife Biologist</u>	BS. Wildlife Science, NMSU, (1970) MS. Range Science, NMSU (1972) Gila NF, District Range Con. (1972-74) Gila NF, Forest Wildlife Biologist (1974-Present)	Member Core Team. Member Interdisciplinary Team All Wildlife Input.
<u>Baldwin, John B.</u> <u>Forest Range Staff Assist.</u>	BS Range Science, Utah State U. (1968) Lincoln N.F., Dist. Range & Wild. Staff Tonto N.F., Dist. Range, Recreation, & Wildlife Staff Gila N.F., Dist. Range, Recreation, & Wildlife Staff Gila N.F., Forest Range Staff Assistant	Member Core Team. Member Interdisciplinary Team. Assist. Development of Forest Rangeland Model. All Range Input.
<u>Bradsby, Ronald L.</u> <u>District Ranger, Mimbres</u> <u>Ranger District</u>	BS Forest Management, Col. State U. (1965) Apache N.F., Dist. Timber Staff Apache N.F., Dist. Assist. Timber Staff Apache N.F., Dist. Rec. & Lands Staff Santa Fe N.F., Dist. Timber Staff Apache N.F., Dist. Timber Staff Gila N.F., District Ranger (Mimbres)	Member Management Team. Develop Concerns. Team Leader, Development of Management Prescriptions.
<u>Buckner, Wayne L.</u> <u>District Ranger, Silver</u> <u>City Ranger District</u>	MS Forest Management, Iowa State Univ. (1961) 26 years Experience - 5 years R-1 11 years as District Ranger, all in Region 3.	Member Management Team. Develop Forest Management Prescriptions, Emphasis on Silver City Ranger District.
<u>Carson, Roy</u> <u>District Ranger, Silver</u> <u>City Ranger Dist.</u>	BS Forest & Range Management, Colo. State Univ. (1963) Assistant District Ranger (7yrs.) District Ranger - 2 Districts (12yrs.) Range, Wildlife and Soils Staff Officer, Cibola N.F. (1982-Present)	Member Management Team. Develop Forest Management Prescriptions, Forest Wide. Develop Issues & Concerns.
<u>Cooke, Derrick C.</u> <u>District Ranger, Reserve</u> <u>Ranger District</u>	BS Range & Wildlife Management, Texas Tech. (1967) MS Range & Wildlife Management, Texas Tech. (1969) Nat. Park Service, Biologist (1967-1968) Gila N.F., Dist. Range Staff (1969-1972) Santa Fe N.F., Wildlife Biol. (1973-1976) Carson N.F., Dist. Ranger, (1977-1981) Gila N.F., Dist. Ranger, (1981-Present)	Member Management Team. Develop Forest Management Prescriptions, Emphasis on Reserve Ranger District.
<u>Copeland, Douglas W.</u> <u>Preconstruction Engineer,</u> <u>Transportation Planner</u>	BS Civil Engineer, Texas Tech. (1977) MS Transportation Engineering, Univ. of Cal. at Berkley (1981) Gila N.F. Facilities and Road Const. Inspection, Road Design, & Transportation Planning	Transportation Planning, Develop Forest Management Prescriptions as they Apply to Road needs and Construction.

<u>Dille, Loyd G.</u> <u>Forest Engineer, Staff</u>	Associates of Engineering Science, Idaho State Univ. [1965] BES Civil Engineering, BYU, [1968] 17 Years experience with Forest Service in Regions 3,4 and 10. Served on 4 Forests and 1 Regional Office. Currently Forest Staff Officer	Oversee all Engineering Input to Forest Plan. Member of Management Team.
<u>Elson, Jerry W.</u> <u>District Ranger, Luna</u> <u>Ranger District</u>	BS Forest & Range Mgmt. Colorado State Univ. [1964] Coronado N.F., Assist. Dist. Ranger Apache N.F., Dist. Range Staff Lincoln N.F., Dist. Timber-Rec. Staff Tonto N.F., District Ranger Coronado N.F., Forest Range Staff Assist. Prescott N.F., District Ranger Gila N.F., District Ranger	Member Management Team, Develop Forest Management Prescriptions, Assist in the Developing Issues & Concerns.
<u>Engel, Gerald A.</u> <u>Land Management Planner</u> <u>Staff</u>	BS Forestry, Univ. of Missouri [1972] MRS-Master of Regional Planning-Univ. of Pennsylvania [1974] NasPerce N.F., Planner Beaverhead N.F., Planner and Computer Specialist Gila N.F., Land Management Planner	Planning Staff Officer, Team Leader - Forest ID Team, Analyst, Computer Program Planner.
<u>Ewan Jr., George E.</u> <u>Forest Dispatcher</u>	BA [Business Admin.] WNMU, [1972] Gila N.F., Dist., Forest Tech [1968-1971] Gila N.F., Aerial Fire Base [1977] Gila N.F., Land Survey Assist. [1972-1973] Gila N.F., Dist. Helitask Foreman [1973] Gila N.F., Assist. Forest Dispatcher [1974-1975] Gila N.F., Forest Dispatcher (1975-Present)	Developed Fire Management Data for Land Management Plan.
<u>Figart Jr., Talmage L.</u> <u>Forest Timber, Soils,</u> <u>Watershed Staff</u>	BS Forestry, Oklahoma State Univ. [1956] Sitgreaves N.F., District Jr. Forester Santa Fe N.F., Assist. District Ranger Carson N.F., District Ranger Tonto N.F., District Ranger Cibola N.F., Job Corp Center Director Regional Office, R-3, Timber Mgmt. Staff Specialist Gila, N.F., Timber Staff Officer	Management Concerns, Member Management Team, Review and Develop Forest Prescriptions Oversee all Timber, Soils, and Watershed Input.
<u>Gardner, Michael G.</u> <u>District Ranger, Wilderness</u> <u>Ranger District</u>	BS Forestry, Oklahoma State Univ. [1974] Black Hills N.F., Timber Marker [1971] Quachita N.F., Recreation Aid [1972] Cibola N.F., Fire Tech. [1974-1975] Gila N.F., Dist. R & L Staff [1975-1977] Cibola N.F., Dist. Minerals Substaff [1977-1979] Carson N.F., Dist. R & L - Timber Staff [1979-'82] Gila N.F., District Ranger [1982-Present]	Member Management Team, Forest Prescriptions, Assist Development of Management Emphasis and Descriptions of Management Areas, Evaluated Alternatives.
<u>Garland, John</u> <u>District Ranger, Glenwood</u> <u>Ranger District</u>	BS Range Science, Abilene Christian MS Range Science & Ecology, Univ. of Wyoming [1974] 10 1/2 Years with Forest Service Gila, N.F., District Ranger	Member Management Team, Forest Prescriptions, Assist Formulation Budget & Outputs

<u>Hansen, William R.</u> <u>Forest Hydrologist</u>	BS Forest & Watershed Management, Colo. State Univ. [1980] Post Graduate - Watershed Mngt., Colo. State Univ. [1980] Tonto N.F., Hydrologist [1980-1983] Gila N.F., Forest Hydrologist [1983-]	Member Interdisciplinary Team, Provided Soil & Water Resource data to Forest Plan, Develop Forest Prescriptions.
<u>Hardan, Betty K.</u> <u>Computer Assistant</u>	Kentucky Southern Univ., Undergraduate Western New Mexico Univ. Undergraduate, Computer Sciences 7 Years, Gila N.F., Computer Specialist	Computer Hardware & Software Custodian, Documentation, All Data Base.
<u>Hasly, Stephen M.</u> <u>Forest Timber SubStaff</u>	BS Forestry, Arizona State Col. [1964] Coconino N.F., Dist, Forest Tech. (3yr.) Forester, Timber-Variou Forests [18yr.] Gila N.F., Timber Specialist (Last 8yrs.)	Member Interdisciplinary Team, All Timber Input to Forest Plan.
<u>Henderson, Ronald L.</u> <u>Recreation, Lands, and</u> <u>Minerals Staff Officer</u>	BS Forestry, Univ. of Idaho [1963] University of Arizona [1977] Clemson University [1978] Payette N.F., Forest Worker [1960-62] Apache N.F., Dist. Staff [1963-66] Cibola N.F., Dist. Staff [1966-68] Tonto N.F., District Ranger [1968-71] Carson N.F., District Ranger [1971-76] Gila N.F., Forest Staff [1976-Present]	Member Management Team, Develop Forest Prescriptions & Management Concerns, Review Recreation-Lands-Cultural-Minerals Input to Plan.
<u>Hill, Jean M.</u> <u>Computer Specialist</u>	BS [Business Admin.] Colo. State Univ. USDA, Fort Collins Computer Center Computer Operator Willamette N.F., Computer Tech./Specialist Cibola N.F., Computer Specialist Mt. Baker-Snoqualmie N.F., Comp. Specialist Gila N.F., Computer Specialist, Current	Software Testing/Writing, Computer Files Mgmt.
<u>Janes, Joseph B.</u> <u>Forest Archeologist</u>	BA Anthropology, Syracuse Univ. [1949] Coconino N.F., Fire & TSI Crew Leader Regional Office, Photogrametric Aid Apache N.F., Fire, Timber, Range, V.I.S. Interpretation Coronado N.F., V.I.S. Specialist Gila N.F., Timber Sale Admin., V.I.S. Interpretation & Coordinator, Archeologist	Cultural Input to Forest Plan, Interdisciplinary Team Member
<u>Jourdan, Richard L.</u> <u>Deputy Forest Supervisor</u>	BS Forestry/Engineering, Univ. Mo. [1958] Cibola N.F., Dist. Assist. Ranger Coconino N.F., Timber & Road Layout Apache N.F., Job Corps Center Director Santa Fe N.F., Job Corps Center Director Sitgreaves N.F., District Ranger Lincoln N.F., Recreation & Lands Staff Gila N.F., Deputy Forest Supervisor	Direction and Guidance for Overall Forest Planning Effort
<u>Kiser, Kenneth L.</u> <u>Operations Research Analyst</u>	BA Environmental Planning, BYU [1975] MPA Public Administration, BYU [1977] MS Forest Economics, Michigan State University [1982] Recreation Planner Imperial Co. CA [1yr] Seasonal Forestry Tech. [1969, 1972-76] Assistant Planner/Economist R2 [1978-83] Operations Research Analyst Gila [Present]	Member Interdisciplinary Team Member Core Team; Assist in Preparation of Benchmarks/Alternatives; Economic Analysis; Technical Report Assistance; Analyst
<u>Lyle, Robert F.</u> <u>District Ranger, Quemado</u> <u>Ranger District</u>	BS Forestry, [1960] Private Forestry, 6 Months 22 years Forest Service. Gila N.F., District Ranger [Current]	Member Management Team. Developed Prescriptions.

Marty, Artemas D.
Forest Engineer, Staff

(Data Not Available)

Member Management Team,
Overall Input Engineering

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Administrative Officer

BA Business Administration, Western
State College of Colo. (1960)
Arapaho N.F., Administrative Trainee
San Isabel N.F., Admin. Assistant
Regional Office R-3, Accounts Payable
and Collections
Kaibab N.F., Administrative Officer
Sitgreaves N.F., Administrative Officer
Gila N.F., Administrative Officer (Current)

Member Management Team,
Provide Socio-Economic
Input to Forest Plan

Otteni, Lee C.
District Ranger, Glenwood
Ranger District

BS Wildlife Science, N.M.S.U. (1969)
MS Range Science, Texas Tech, (1971)
Gila N.F., Assistant Ranger
Prescott N.F., Wildlife Biologist
Carson N.F., Dist. Range, Rec., Fire,
Watershed, Wildlife Staff
Lincoln N.F., Dist. Range, Watershed,
Wildlife Staff
Gila N.F., District Ranger

Member Management Team,
Develop Issues and Concerns

Palm, Sigfrid G.
District Ranger, Wilderness
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BS Forestry & Range Mgmt., Utah State
Univ. (1970)
Bighorn N.F., Dist. Timber, Range, Fire
Wildlife, Recreation & Lands Staff
Prescott N.F., Dist. Recreation & Lands
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Gila N.F., District Ranger

Member Management Team,
Develop Issues and Concerns

Schiowitz, Robert H.
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BA Cultural Anthropology, Univ. Cal.
Santa Barbara (1975)
Mimbres Foundation, Research (1974-76)
Wirth Associates, Consultant (1977)
Archeological Systems Management,
Consultant (1977-1979)
Klamath N.F., Seasonal Archeologist
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Kaibab N.F., Assist. For. Archeologist
(1980-84)
Gila N.F., Forest Archeologist (Current)

Provide Editing of Previous
Archeological Input to Forest
Plan.

Schloss, Robert B.
For. Landscape Architect

BLA (Landscape Architecture), BS Forestry,
Syracuse University (1962)
Monongahela N.F., Landscape Arch. Assist.
(1966-67)
Coconino N.F., Forest Landscape Architect
(1967-69)
Clearwater N.F., Forest Landscape Arch.
(1969-76)
Idaho Panhandle N.Fs., Planner (1976-78)
Gila N.F., Forest Landscape Architect
(1978 to Present)

Member Interdisciplinary
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Scoggin, Kenneth C.
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BS Range Mgmt., N.M.State Univ.(1954)
Regional Office R-3, Range Con.
Coconino N.F., Assistant Ranger
Panhandle National Grasslands, Dist.
Ranger
Carson N.F., District Ranger
Kaibab N.F., Range & Wildlife Staff
Santa Fe N.F., Deputy Forest Supervisor
Modoc N.F., Forest Supervisor
Gila N.F., Forest Supervisor (Current)

Provide Overall Guidance and
Direction for Forest Plan.
Member Management Team

Shipp, Charles E.
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BS Range Mgmt. Colo. State Univ. [1969]
BLM, Grand Junction, Colo., Range
Conservationist [1969-70]
Coronado N.F., Assist. Ranger [1970-72]
Coronado N.F., Dist. Range Staff [1972-74]
Tonto N.F., Dist. Range Staff [1974-75]
Tonto N.F., Dist. Range Staff [1975-78]
Gila N.F., District Ranger [1978-Present]

Member Management Team,
Develop Prescriptions and
Assist in Editing Plan.
Draft Technical Reports.

Souders, Charles E.
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BS Agronomy, Colo. State Univ. [1974]
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Member Interdisciplinary
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Subirge, Thomas
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BS Forest Resource Mgmt. Univ. of
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MS Soil & Water Sciences, Univ. of
Arizona
Tonto N.F., Dist. Remote Sensing
Tonto N.F., Soil Scientist
Gila N.F., Soil Scientist

Assist Forest Soil Scientist
in all Aspects of Planning

Thompson, Hugh C.
Range & Wildlife Staff

BS Forest Range Mgmt., Colo. State
Univ. [1965]
Coconino N.F., Dist. Range/Wildlife
Staff
Sitgreaves N.F., Dist. Range/Wildlife
Watershed Staff
Carson N.F., Dist. Range/Wildlife,
Watershed, Fire Staff
Carson N.F., District Ranger
Tonto N.F., District Ranger
Gila N.F., Range/Wildlife Staff [Current]

Member Management Team,
Develop Prescriptions,
Review all Range/Wildlife
Input to Forest Plan

Webb, Donald R.
Forest Fire Mgmt. Staff

Associate Degree, Mason City Jr. Col.
[1954]
1 Yr. Forestry, Univ. of Idaho [1956]
St. Joe N.F., Blister Rust Control
Payette N.F., Smokejumper
Gila N.F., Smokejumper
Coronado N.F., Fire Management Officer
Regional Office R-3, Fire and Aviation
Gila N.F., Fire Management Staff [Retired 1984]

Member Management Team,
Overall Coordination Fire
Input to Forest Plan

Williams, James W.
Forest Hydrologist

[Data not available]

6. Consultation With Others

REVIEW COPIES

Copies of the EIS, EIS Summary and Gila National Forest Plan are available for review at the Forest Service offices and public libraries listed below.

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STERLING D. & JULIA V. ROBERTS

LORDSBURG NM

LORDSBURG HIDALGO CO. CHAMBER OF COMMERCE
DAVID A. ROMERO
A. MILTON JENSEN

MESILLA NM

THOMAS SZYDLÓWSKI

MESILLA PARK NM

FRED RUFF, JR. & WIFE
DAVID L. ARNN

MESQUITE NM

CLIFFORD WEAVER

MIMBRES NM

JAKE OSBORN
JAMES R. SWETNAM
MICHAEL J. CARR
CHARLOTTE GAUSSOIN
ROD L. CHANDLER
ROBERT A. DUNN
FOWLER CATTLE COMPANY, % JOHN H. FOWLER

MULE CREEK NM

BOB CONNER
EUGENE E. & BUDDY E. JOHNSON
A. L. TRAYNOR
C. E. & BARBARA STOCKTON
GEORGE C. & KATHRYN M. SCHALE
HERBERT A. BAYS II

ORGAN NM

RUPERTO LEGARRETA
RANDY SWINDEL
TOM A. STELES

PINDS ALTOS NM

RICHARD B. FAHRENDER

SAN LORENZO NM

FRANCIS BIEBELLE
BIEBELLE BROTHERS, INC.
LOUIS L. OLIVER
MOGOLLON HIGHLANDS WATERSHED ASSOCIATION, %PETER RUSSELL

SAN LORENZO NM
HORACE L. BOUNDS
C. V. DOMINGUEZ
BEN DOBBIN, SOUTHWEST OUTWARD BOUND SCHOOL

SILVER CITY NM
YSABEL & PAUL LUECKE
JACK SHERMAN
AL SHELL
KNFT RADIO
RICHARD JOHNSON
CLYDE R. & BARBARA BIRKLA
H. T. ATCHISON
WILLIAM H. HOGE
KEITH LEMAY, KNFT
CLARENCE A. LATHROP
JOE B. FROST
HUNT MANGUS RANCH PARTNERSHIP
ELEANOR M. SIEMER
CARL SALARS
A. J. GARNER
FROST BROTHER'S
GLENN T. GRIFFIN
THOMAS R. SHELLEY
V. A. MOITORET
CAPT. EDWIN L. DUNN, U.S.A.R. REP.
JOHN LOPEZ
REBECCA L. CAMPBELL
HARRY A. SONTAG
FRANKS RANCH, INC.
DOC CAMPBELL
STEPHANIE OLIVER
BRUCE J. HAYWARD
BOB MESKILL, KSIL RADIO
DAVID G. MATTHEWS
DAVID MAXWELL
RAYMOND T. SWIGART
JIM NEELEY
W. D. RANCH, INC.
ALVIN E. FRANKS
BOB LANGSENKAMP
WALTER R. NICHOLS
HIRAM PARENT, NEW MEXICO AUDUBON COUNCIL
M. G. STEPANOVICH
O. E. & PHYLLIS V. GRUBB
FRANK & DELLA C. RICHARDSON
TEXAS-NEW MEXICO POWER CO. % W. H. IVY

TYRONE NM
J. KOLESSAR, PHELPS DODGE
R. E. RHODES, PHELPS DODGE
A. E. HIMEBAUGH, PHELPS DODGE

CLOVIS NM
RANDY A. ELLISON

ROSWELL NM
ELIZABETH PALLESEN
J. B. BUSBY
HOODS OF THE WOODS
CLIFFORD GRAHAM
DIAMOND A CATTLE COMPANY

ARTESIA NM
THOMAS A. PETERSON
JAMES BUTCHER

CARLSBAD NM
CARLSBAD CHAMBER OF COMMERCE
W. D. SEXTON
WALTER L. HUTTE
MR. & MRS. W. M. FINCHER
DENNIS SCHMIDT
T. H. FARRELL
FRANK KWIECIEN
CHARLES L. GANEL
HERMAN BLOOMER
ROBERT N. MEYER
MIKE ATWOOD
LIVING DESERT STATE PARK
LOREN CAMMON
R. C. BROOKS
MR. MAX D. MALONEY
JAMES W. BLUNT
DWIGHT DEAL

DEXTER NM
BUDDY JENSEN

FOCUS NM
DALE ROBERTS
DAVID R. HOOTEN
DR. STEVE MAIER
TOM LUND

HOPE NM
J. B. RUNYAN, INC.

LOVINGTON NM
S. G. ORAND

ALAMOGORDO NM
MICHAEL J. HESS, WHITE SANDS FOREST PRODUCTS
MONTE HOOVER
HERMAN H. HASBROUCK
LEROY SHAW
BUD ALEXANDER
GUY GALLOWAY
LYMAN B. JENNINGS
GERRI SMITH
HAL REYNOLDS
HONORABLE AUBREY DUNN
OTERO SOIL & WATER CONSERVATION DIVISION

ALTO NM
TRAVIS & GINNY MARTIN

CLOUDCROFT NM
DON & BARB GEURIN

HIGH ROLLS NM
M. RENETTA FRIESEN

ORAGRANDE NM
ERIC BAILEY

RUIDOSO NM
JIM RANKIN
LARRY TILLMAN
MICHAEL HALUSCHAK
GARY C. MITCHELL
GERALD KEETON
RONNIE K. TAYLOR

RUIDOSO DOWNS NM
C. A. CHIDLEY

TULAROSA NM
GABRIEL A. DESMARE

RENO NV
TERRA AQUA CONSERVATION, INC.

ROLLINGS HILLS EST CA
R. S. BUCHANAN

PASADENA CA
R. G. HAHN & M. F. BRUBAKER

BROWLEY CA
SAMUEL E. & MARION A. STACEY

SAN BERNADINO CA
ENVIRO-DEVELOP

LAGUNA CA
CHARLES REEVES

SOLVANG CA
MR. GLEN ODELL, PRESIDENT, NATIONAL OFF-ROAD BICYCLE ASSOC.

PORTLAND OR
WILLIAM B. MORSE, WILDLIFE MANAGEMENT INSTITUTE

EUGENE OR
FOREST PLANNING

WALLA WALLA WA
BEN M. MORRIS

CRESTON B.C. CANADA
HARRY MELTS

Glossary

A

ACCESSIBLE FUELWOOD AREAS - Pinyon/Juniper fuelwood areas that are roaded and are on 0 to 20 percent slopes.

ACRE FOOT - A water volume measurement equal to the amount of water that would cover one acre to a depth of one foot [43,560 cubic feet or 325,851 gallons].

ACRE-EQUIVALENT - A unit of habitat output related to fish or wildlife habitat improvement projects. Acre equivalents are based on the acres of habitat that are influenced by an acre of habitat actually modified by the project. For example, an acre of winter range burned is credited with influencing five acres of summer range.

ACTIVITIES - Actions, measures, or treatments that are undertaken which directly or indirectly produce, enhance, or maintain forest and rangeland outputs or achieve administrative or environmental objectives.

ACTIVITY FUELS - Logging debris generated from any activity on the Forest such as firewood gathering, precommercial thinning, timber harvesting, and road construction, which increases fire potential.

ADMINISTRATIVE SITE - A site which primarily exists for general administrative purposes. It normally will include office, warehouse, outside storage, and parking areas. It may include housing and pasture for livestock. A work center may be part of an administrative headquarters site.

AFFECTED ENVIRONMENT - The biological, physical, social, and economic environment subject to changes that will or may take place, as a result of proposed human activity.

AGE CLASS - Interval of years, commonly 20, into which trees are grouped for management. Example: 1 to 20 years, 21 to 40 years.

ALIENATED MINERAL RIGHTS - Ownership of the mineral rights is by someone other than the surface rights owner.

ALLOCATION - The assignment of management prescriptions to particular land areas to achieve the goals and objectives of an alternative.

ALLOWABLE SALE QUANTITY (ASQ) - The quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a time period specified by the Plan. The quantity is usually expressed on an annual basis as the average annual allowable sale quantity. For timber resource planning purposes, the allowable sale quantity applies to each decade over the planning horizon and includes only chargeable volume. Consistent with the definition of timber production, fuelwood or other nonindustrial wood shall not be included in the allowable sale quantity.

ALTERNATIVE - A proposition or situation offering a choice between two or more management methods, only one of which may be chosen.

AMENITY - The pleasurable, educational, or aesthetic features of the land or resources.

ANALYSIS AREA - One or more sites combined for the purpose of analysis in formulating alternatives and estimating various impacts and effects.

ANALYSIS OF MANAGEMENT SITUATION (AMS) - A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services.

ANIMAL UNIT MONTH (AUM) - The quantity of forage required by one mature cow [1,000 pounds] or the equivalent for one month.

AQUATIC - Pertaining to standing and running water in streams, rivers, lakes, and reservoirs.

AQUATIC/FISHERIES HABITAT EVALUATION - An assessment of sediment, spawning gravel, stream bottom type, water temperature, stream shading, stream bank stability, large woody debris, macroinvertebrates and other habitat components important to fish and other aquatic species.

ARTERIAL ROADS - Roads that provide service to large land areas and usually connect with public highways or other Forest arterial roads to form an integrated network of primary travel for maximum mobility and travel efficiency, rather than specific resource-management service. They are usually developed and operated for long-term land and resource management purposes and constant service.

ARTIFACT - An object that has been modified, used, or constructed by man. Stone tools, pottery, buildings, roads, and mines are examples of artifacts.

ASSESSMENT - The Renewable Resource Assessment required by the Resources Planning Act [RPA].

AUM - See "Animal Unit Month."

AVAILABLE FOREST LAND - Land which has not been legislatively withdrawn by Congress or administratively withdrawn by the Secretary of Agriculture or Forest Service Chief from timber production.

B

B/C VALUES - See "Benefit/Cost Ratio."

BASAL AREA - Measurement of how much of a site is occupied by trees. It is determined by measuring the square feet of the diameter of all the trees in an area at breast height [4.5 feet].

BASE TIMBER HARVEST SCHEDULE - The timber harvest schedule in which the planned sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade of the planning period, and this planned sale and harvest for any decade is not greater than long-term sustained yield capacity. [36 CFR 219.3[c] NFMA Regulations]

BENCHMARK - A category of Forest Planning Alternatives used to establish standards by which to compare alternatives considered in detail. Benchmark Alternatives include minimum level, minimum acceptable level, maximum resource levels, and maximum present net value levels.

BENEFIT/COST RATIO - The total discounted benefits of any activity divided by the total discounted costs.

BEST MANAGEMENT PRACTICES - Methods, measures, or practices to prevent or reduce water pollution, including, but not limited to, structural and nonstructural controls and operation and maintenance procedures. Usually, BMPs are applied as a system of practices rather than a single practice. BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility.

BIG GAME - The larger species of wild animals that are hunted, such as elk, deer, bighorn sheep.

BIOLOGICAL POTENTIAL - The maximum production of a selected organism that can be attained under optimum management.

BLM - Bureau of Land Management, U.S. Department of the Interior.

BOARD FOOT - Measure of an amount of timber equivalent to a piece 12" x 12" x 1". The boards bought at a lumber store are somewhat smaller because they have been planed or made smooth.

BOARD FOOT/CUBIC FOOT CONVERSION RATIO - Both board foot and cubic foot volumes can be determined for timber stands. The number of board feet per cubic foot of volume varies with tree species, diameter, height, and form factors.

C

BROWSE - Twigs, leaves, and young shoots of trees and shrubs on which animals feed; in particular, those shrubs which are utilized by big game animals for food.

CABLE LOGGING - A method for transporting logs from stumps to collecting points which utilizes a cable system as the main device for moving them.

CANOPY - The more or less continuous cover of branches and foliage formed collectively by the crown of adjacent trees and other woody growth.

CAPABILITY - The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils, and geology, as well as the application of management practices, such as silviculture or protection from fires, insects, and disease.

CAPABILITY AREA - An area of land delineated for the purpose of estimating responses to various management practices, resource values, output coefficients, and multi-resource or joint production functions. Capability areas may be synonymous with ecological land units, ecosystems, or land response units. Capability areas are the single geographic delineations used to describe characteristics of the land and resources in integrated forest planning.

CAPABLE FOREST LAND - Land with a biological growth potential which is equal to or exceeds the minimum standard for timber production (an average annual growth rate of at least 20 cubic feet per acre).

CAPABLE RANGE - Land that produces forage for animal consumption without impairing other forage values; generally considered as land that is not being cultivated.

CARRYING CAPACITY - The optimum density of a species which a given environment or range is capable of sustaining, without deteriorating that environment or range.

CAVITY - The hollow excavated in trees by birds or other natural phenomena; used for roosting and reproduction by many birds and mammals.

CEQ - Council on Environmental Quality.

CFR - Code of Federal Regulations.

CHARGEABLE VOLUME - All volume that is included in the growth and yield projections for the selected management prescriptions used to arrive at the allowable sale quantity, based on Regional utilization standards. Consistent with the definition of timber production, planned production of fuelwood is not included in the allowable sale quantity and therefore is nonchargeable. However, in the implementation of the forest plan, unforeseen conditions may warrant selling as fuelwood some volume that was included in the allowable sale quantity, for example, timber severely damaged by fire or insects. In such cases, fuelwood volume is chargeable.

CHEMICAL WATER QUALITY - Measurements of chemical parameters (alkalinity, dissolved oxygen, dissolved iron, etc.) used to describe the quality of water.

CLEARCUTTING - Harvesting of all trees in one cut on an area for the purpose of creating a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as a separate age class in planning. Regeneration is obtained through natural seeding, or through planting or direct seeding.

CMAI [Culmination of Mean Annual Increment] - The age at which the average annual growth is greatest for a stand of trees. Mean annual increment is expressed in cubic feet measure and is based on expected growth according to the management intensities and utilization standards assumed in accordance with 36 CFR 219.16(a)(2)(i) and (ii). Culmination of mean annual increment includes regeneration harvest yields and any additional yields from planned intermediate harvests.

COLLECTOR ROADS - Roads that serve smaller land areas and are usually connected to Forest arterial roads or public highways. They collect traffic from local roads and terminal facilities. Collector roads are operated for constant use.

COMMERCIAL FOREST LAND [CFL] - Forest land which is producing or capable of producing crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary, or the Chief of the Forest Service; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils, productivity, or watershed conditions; and (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within five years after final harvesting.

COMMERCIAL THINNING - Cutting for the sales of products [poles, posts, pulpwood, etc.] in immature stands to improve the quality and growth of the remaining stand.

COMMODITY OUTPUTS - A resource output with commercial value; all resource products which are articles of commerce.

COMMON VARIETY MINERALS - "See Minerals, Common Variety."

COMMUNITY LIFESTYLES - The ways in which residents conduct their everyday routines and how the "way they live" is associated with National Forest.

CONCERN - See "Management Concern."

CONDEMNATION - In real property law, the process by which property of a private owner is taken for public use, without his consent, but requiring payment of just compensation.

CONIFER - A group of cone-bearing trees, mostly evergreen, such as the pine, spruce, fir, pinyon, juniper, etc.

CONSTRAINED MAXIMUM LEVEL BENCHMARK - The highest level of a particular output that could be produced over time, subject to the production of minimum acceptable levels for all other outputs.

CONSTRAINT - A quantification of the minimum or maximum amount of an output or cost that could be produced or incurred in a given time period.

CONSUMPTIVE USE - Those uses of a resource that reduce the supply. For example, some consumptive uses of water are: irrigation, domestic, and industrial use.

CORD - A unit of gross volume measurement for stacked round or split wood. A standard cord is 4' x 4' x 8' or 128 cubic feet. A standard cord may contain 60 to 100 cubic feet of solid wood depending on the size of the pieces and the compactness of the stack.

CORRIDOR - A linear strip of land which has ecological, technical, economic, social, or similar advantages over other areas for the present or future location of transportation or utility routes.

COST COEFFICIENTS - Values which relate an acre of land to a particular dollar cost in a specific period of time.

COST EFFICIENCY - A comparative measure of economic efficiency determined by maximizing the present net value of an alternative, subject to meeting the objectives of the alternative.

COUNCIL ON ENVIRONMENTAL QUALITY - An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews federal programs for their effect on the environment, conducts environmental studies and advises the President on environmental matters.

COVER HABITAT - Ponderosa pine and mixed conifer stands characterized by 70+ percent canopy cover with trees from 10-23' diameter at breast height and stand basal areas from 75 to 140 square feet B.A.

CRITICAL HABITAT - That portion of a wild animal's habitat that is critical for the continued survival of the species.

CUBIC FOOT - The amount of the timber equivalent to a piece of wood one foot by one foot by one foot.

CULMINATION OF MEAN ANNUAL INCREMENT (CMAI) - The age at which the average annual growth is greatest for a stand of trees. Mean annual increment is expressed in cubic feet measure and is based on expected growth according to the management intensities and utilization standards assumed in accordance with 36 CFR 219.16(a)(2)(i) and (ii). Culmination of mean annual increment includes regeneration harvest yields and any additional yields from planned intermediate harvests.

CULTURAL RESOURCE - The physical remains of past human cultural systems and places or sites of importance in human history or prehistory.

D

DBH - Diameter at breast height. Diameter of a tree approximately four and one-half feet above the ground.

DECISION SPACE - The upper and lower output limits within which a decision to produce a specific output can be made.

DEMAND TRENDS - The Gila did not estimate demand for timber using the standard variables which might be suggested by conventional economic theory. Instead, the Gila used the approach of examining the historic pattern of timber sales. The average sold over the past 14 years includes good and bad economic conditions, and results in an average of approximately 30 MMBF of sawtimber sold. This level has been projected as the new demanded level.

DEPARTURE - A schedule which deviates from the principle of nondeclining flow by exhibiting a planned decrease in the timber sale and harvest schedule at any time in the future. A departure can be characterized as a temporary increase, usually in the beginning decade(s) of the planning period, over the base sale schedule that would otherwise be established, without impairing the future attainment of the Forest's long-term sustained yield capacity.

DEVELOPED RECREATION - Recreation that requires facilities that result in concentrated use of an area. Examples are campgrounds and ski areas. Facilities might include: Roads, parking lots, picnic tables, toilets, drinking water, ski lifts, and buildings.

DIRECTIONAL DRILLING - The art of drilling a borehole wherein the course of the hole is planned before drilling. Such holes are usually drilled with rotary equipment at an angle to the vertical, and are useful in avoiding obstacles or reaching side areas.

DISPERSED RECREATION - In contrast to developed recreation sites, such as campgrounds, picnic grounds, winter sports sites, resorts, and recreation residences, dispersed recreation areas are the lands and waters under Forest Service jurisdiction which are not developed for intensive recreation use. Dispersed areas include general undeveloped areas, roads, trails, and water areas not treated as developed sites.

DIVERSITY - The relative degree of abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area. Of the total number of species in a biotic community only a few are usually abundant while most are relatively uncommon. Because the large number of uncommon, relatively unimportant species largely determine the amount of "species diversity", this property is often expressed as a species diversity index which is calculated so as to better reflect the importance of those few species whose numbers, biomass, productivity, etc., so greatly dominate these attributes of the entire biological community.

E

EA - Environmental Assessment.

EARLY FOREST SUCCESSION - The biotic community that develops immediately following the removal or destruction of the vegetation in an area.

ECONOMIC EFFICIENCY ANALYSIS - A comparison of the values of resource inputs [cost] required for a possible course of action with the values of resource outputs [benefits] resulting from such action. In this analysis, incremental market and nonmarket benefits are compared with investment and physical resource inputs.

ECONOMICS - The study of how resources, goods, and services are allocated among competing uses.

ECOSYSTEM - The system formed by the interaction of a group of organisms and their environment.

EFFECTS - Results expected to be achieved or actually related to physical, biological, and social [cultural and economic] factors resulting from the achievement of outputs. Examples of effects are tons of sediment, pounds of forage, person-years of employment, income, etc. There are direct effects, indirect effects, and cumulative effects.

ENDANGERED SPECIES - Any species which is in danger of extinction throughout all or a significant portion of its range.

ENDEMIC - Native or confined to a certain region; having a comparatively restricted distribution.

ENVIRONMENTAL ANALYSIS - An analysis of alternative actions and their predictable short- and long-term environmental effects which include physical, biological, economic, social, and environmental design factors and their interactions.

ENVIRONMENTAL ASSESSMENT - The concise public document required by the regulations for implementing the procedural requirements of NEPA (40 CFR 1508.9).

ENVIRONMENTAL IMPACT STATEMENT (EIS) - The version of the statement of Environmental Effects required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA), and released to the public and other agencies for comment and review. It is a formal document which must follow the requirements of NEPA, the Council on Environmental Quality (CEQ) guidelines, and directives of the agency responsible for the project proposal.

EROSION - The wearing away of the land's surface by running water, wind, ice, or other geological agents. It includes detachment and movement of soil or rock fragments by water, wind, ice, or gravity. Specific types of erosion include: natural erosion - erosion under natural environmental conditions; gully erosion - erosion in narrow channels to depths of up to 100 feet; rill erosion - erosion of small channels, easily obliterated by tillage; sheet erosion - uniform removal of soil without conspicuous channels; wind erosion - erosion not related to slope gradient, typical of areas with low rainfall and persistent winds.

EVAPOTRANSPIRATION - The conversion of water, whether open or as soil moisture within plants, into water vapor that is released into the atmosphere.

EVEN-AGED SILVICULTURE - The combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Managed even-aged forests are characterized by a distribution of stands of varying ages (and therefore tree sizes) throughout the forest area. Regeneration in a particular stand is obtained during a short period at or near the time that the stand has reached the desired age or size and is harvested. Clearcutting, shelterwood cutting, seed tree cutting, and their many variations are the cutting methods used to harvest the existing stand and regenerate a new one. In even-aged stands, thinnings, weedings, cleanings, and other cultural treatments between regeneration cuts are often beneficial. Cutting is normally regulated by scheduling the area of harvest cutting to provide for a forest that contains stands having a planned distribution of age classes. (36 CFR 211.3[k] NFMA Regulations.)

EVEN-FLOW - Maintaining a relatively constant supply of timber from decade to decade.

EXPERIENCE LEVELS - The range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from "primitive" to "modern" is defined in the National Forest System.

EYRIE - The nesting site of a bird of prey, as an eagle or a hawk.

F

FAUNA - The animals of a given region or period.

FEE SITE - A Forest Service recreation area in which users must pay a fee. Fee sites must meet certain standards and provide certain facilities as specified in the Forest Service Manual.

FINAL CUT - Removal of the last seed bearers or shelter trees after regeneration is considered to be established under a shelterwood system.

FIRE HAZARD - The fuel in which a fire will ignite and burn.

FIRE INTENSITY LEVEL - Based on the average length of the flame at the head of the fire: 1 - one foot flame height; 2 - two foot flame height; and so on.

FIRE MANAGEMENT AREA - One or more parcels of land with clearly defined boundaries and with established fire management direction which is responsive to land and resource management goals and objectives.

FIRE MANAGEMENT/EFFECTIVENESS INDEX (FMEI) - The index value measures effectiveness of annual fire management operational programs. It is a planning, attainment, analysis, and evaluation tool for both annual and long-term programs. Measured in dollars per thousand acres protected, the objective is to minimize the index value.

FIRE RISK - The probability of a fire starting from natural or man-made causes.

FISHERIES HABITAT - Streams, lakes, and reservoirs that contain and support fish.

FLOODPLAIN - Land adjacent to a channel which is covered with water when the stream overflows its banks.

FLOOR/CEILING CONSTRAINT - The maximum (ceiling) or minimum (floor) amount of an output allowed to be allocated by FORPLAN.

FLORA - The plants of a given region or period.

FORAGE - All nonwoody plants (grass, grass-like plants and forbs) and portions of woody plants (browse) available to domestic livestock and wildlife for food. Only a portion of a plant is available for forage if the plant is to remain healthy.

FORAGE AND HERBAGE - Forage refers specifically to all browse and nonwoody plants that are available to livestock or game animals and used for grazing or harvested for feeding. Herbage may also include material not acceptable to grazing or browsing animals.

FORAGE UTILIZATION - (1) The portion of current year's forage production by weight that is consumed or destroyed by grazing animals. Syn., degree of use. Expressed in percent of current year's growth utilized by grazing animals on an average over time based on a system of range management that will maintain the key forage species while achieving other management objectives such as the maintenance of watersheds, wildlife habitat, and recreational values and the protection of regenerating plants. (2) The percent expressed in the "Prescriptions for Management Areas" is the estimated average forage utilization allowable to meet the objectives of that prescription under sustained-yield management.

FORB - Any herbaceous plant other than grass or grass-like plants.

FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974 - A Act of Congress requiring the preparation of a program for the management of the National Forests' renewable resources, and of land and resource management plans for units of the National Forest System. It also requires a continuing inventory of all National System lands and renewable resources.

FOREST LAND - Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

(FOREST LAND) CAPABLE - Forest land which is capable of growing industrial crops of wood. The classification includes both accessible and inaccessible, stocked and non-stocked land.

(FOREST LAND) CAPABLE AND AVAILABLE - Capable forest land which has not been legislatively withdrawn or administratively withdrawn from timber production by the Secretary or the Chief of the Forest Service. This classification includes RARE II Further Planning Areas and administrative designation below the Chief's level withdrawing land from timber production.

(FOREST LAND) CAPABLE BUT NOT AVAILABLE - Capable forest land which has been legislatively withdrawn or administratively withdrawn from timber production by the Secretary or Chief of the Forest Service. Capable but not available forest land is classed as not suited for timber production.

(FOREST LAND) CAPABLE-DEFERRED - Capable forest land which has been legislatively designated or administratively designated by the Secretary or Chief for wilderness study or possible additions to the Wilderness System. This classification includes Wilderness Study areas designated by the New Mexico Wilderness Act.

(FOREST LAND) CAPABLE-RESERVED - Capable forest land which has been legislatively withdrawn or administratively withdrawn from timber production on a permanent basis. Examples of this classification are: Wilderness Areas, Primitive Areas, Research Natural Areas, or special interest areas, or similar formal withdrawals approved by the Chief or higher authority.

(FOREST LAND) NOT CAPABLE - Forest land which is not capable of growing industrial crops of wood. Forest land not capable is classed as land not suited for timber production.

FOREST PLAN - A process, required by Congress, for assessing economic, social, and environmental impacts, which describes how land and resources will provide for multiple use and sustained yield of goods and services.

FOREST SUPERVISOR - The official responsible for administering the National Forest System lands in a Forest Service Administrative unit, which may consist of two or more National Forests of all the Forests within a State. He reports to the Regional Forester.

FOREST SYSTEM ROAD - Roads that are part of the Forest development transportation system, which includes all existing and planned roads, as development transportation facilities.

FOREST WIDE STANDARD - A principle requiring a specific level of attainment, a rule to measure against. The Forest-wide standard applies to all areas of the Forest regardless of the other prescriptions applied.

FURPLAN - A linear programming system used for developing and analyzing Forest planning alternatives.

FSH - Forest Service Handbook.

FSM - Forest Service Manual.

FUEL BREAK - A zone in which fuel quantity has been reduced or altered to provide a position for suppression forces to make a stand against wildfire. Fuel breaks are designated or constructed before the outbreak of a fire. Fuel breaks may consist of one or a combination of the following: natural barriers, constructed fuelbreaks, man-made barriers.

FUEL MODEL - A simulated fuel complex for which all the fuel descriptions required by the mathematical fire spread model have been specified.

FUELS - Include both living plants and dead, woody, vegetative materials which are capable of burning.

FUELS MANAGEMENT - Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

FUELWOOD - Wood that is round, split or sawed, and otherwise, general refuse material cut into short lengths for burning. Also known as firewood.

G

GAME SPECIES - Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fishermen under State or Federal laws, codes, and regulations.

GOAL - A concise statement of the state or condition that a land and resource management plan is designed to achieve. A goal is usually not quantifiable and may not have a specific date for completion. [36 CFR 219.2[1] NFMA Regulations]

GOODS AND SERVICES - The various outputs produced by Forest and range land renewable resources, the tangible and intangible values of which are expressed in market and nonmarket terms.

GRAZING CAPACITY - The maximum level at which animals can graze an area without damage to the vegetation or related resources.

GRAZING PERMITTEE - An individual who has been granted written permission to graze livestock for a specific period on a range allotment.

GROUNDWATER - Subsurface water in a saturated zone or geologic stratum.

GROWING STOCK LEVEL [GSL] - Expressed in either stems per acre or square feet of basal area of timber growing on any area.

GUIDELINE - an indication or outline of policy or conduct.

H

HABITAT - The place where animals live. It can be water for beaver, fish, and aquatic insects; rocks for pika, bats, and some species of birds; or forested areas for many mammals, birds; or forested areas for many mammals, birds, and reptiles.

HABITAT TYPE - An aggregation of all land areas potentially capable of producing similar plant communities at climax.

HARDWOOD - A conventional term for the timber of broad-leaved trees, and the trees themselves, belonging to the botanical group, Angiospermae.

HARVEST CUT - The removal of a stand of trees as a final cut in even-aged management, or the removal of mature trees in uneven-aged management. Regeneration encouragement is emphasized.

HERBICIDE - A chemical compound used to kill or control growth of undesirable plant species.

HERBACEOUS WILDLIFE FORAGE AND COVER - Herbaceous forage and cover utilized by wildlife species. Wildlife needs quantified by amount of overlap between wildlife requirements and livestock forage use. Quantity of wildlife forage and cover is expressed in animal unit month equivalents (600 lbs. air dried forage).

Example: Elk/cattle overlap = 0.85 [food habitat studies]. An elk population level of 4,000 animals would be expected to consume (4,000 elk X 0.85 AUM X 12 months) 40,800 AUM equivalents of forage each year.

HYDROLOGIC FUNCTION - The behavioral characteristics of a watershed described in terms of ability to sustain favorable condition of water flow. Favorable condition of water flow are defined in terms of water quality, quantity, and timing.

IMPLEMENTING REGULATIONS - Regulations generated by an agency to implement Act of Congress, i.e., 36 CFR 219 contains implementing regulations for RPA and NFMA.

IMPROVEMENT - Man-made developments such as roads, trails, fences, stock tanks, pipelines, power and telephone lines, survey monuments, and ditches.

IN-HOLDINGS - Lands within the proclaimed boundaries of a National Forest that are owned by some other agency, organization, or individual.

INDICATOR SPECIES - A wildlife species whose presence in a certain location or situation at a given population level indicates a particular environmental condition. Population changes are believed to indicate effects of management activities on a number of other wildlife species.

INDIGENOUS SPECIES - Species historically native to an area; not introduced by man.

INSECTICIDE - An agent used to control insect populations.

INTEGRATED PEST MANAGEMENT - A management strategy for suppression of forest pests which integrates silvicultural mechanical, biological, and chemical suppression strategies which achieve greater efficiency and safety than the same strategies used alone.

INTEGRATED STAND MANAGEMENT - A concept for designing a complex timber sale by identifying the stand (or portion of a stand) to be treated and incorporating within its unique treatment prescription consideration for all the appropriate resources. The process, in concept, recognizes that all vegetative communities within a given area are interrelated and must be integrated with each other and with the surrounding area.

INTENSIVE GRAZING - Grazing management that controls distribution of cattle and duration of use on the range, usually by fences, so parts of the range are rested during the growing season.

INTERDISCIPLINARY TEAM (ID) - A group of individuals with skills from different resources. An interdisciplinary team is assembled because no single scientific discipline is sufficient to adequately identify and resolve issues and problems. Team members interaction provides necessary insight to all stages of the process.

INTERMEDIATE CUTTING - Any removal of trees from a stand between the time of its formation and the regeneration cut. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.

INTERPRETIVE SITES - A developed site at which a broad range of natural or cultural history is interpreted or described for the enjoyment of the public.

ISSUE - A subject or question of widespread public discussion or interest regarding management of National Forest System Lands.

K

K-V FUNDS - In 1930, Congress passed the Knutson-Vandenberg Act (K-V Act) to authorize collection of funds (K-V Funds) for reforestation and timber stand improvement work on areas cut over by a timber sale.

L

LAND EXCHANGE - The conveyance of nonFederal land or interests to the United States in exchange for National Forest System land or interests in land.

LAND LINE - For Forest Plan purposes, National Forest property boundaries.

LATE FOREST SUCCESSION - A stage of forest succession where the majority of trees are mature or over-mature.

LEASABLE MINERALS - Coal, oil, gas, phosphate, sodium, potassium, oil, shale, and geothermal steam.

LINEAR PROGRAM MODEL - A mathematical method used to determine the best use of resources to achieve a desired result when limitations on available resources can be expressed in the form of equations.

LIVESTOCK GRAZING LEVELS -

Level A - Livestock grazing is entirely eliminated or restricted to situations where it will meet other resource objectives, such as fuel hazard reduction in recreation areas. Areas managed under Level A are not counted in the determination of livestock forage capacities.

Level B - Livestock grazing is very limited. Management is generally accomplished by moving livestock from one place to another. On areas managed under Level B, capacity and actual use are kept in balance by removing or adding livestock. There is very little structural improvement work done, such as fences or water development, and no forage improvement work.

Level C - Level C management controls livestock use through the use of structural improvements and physical movement of livestock. Long-term capacities are balanced with use through adjustments in numbers of livestock. Any forage improvement is generally the result of meeting other resource objectives, such as wildlife habitat improvement.

Level D - Areas under Level D management are managed intensively for livestock grazing within an overall multiple-use concept. Any structural or nonstructural [forage] improvement technique may be used as long as it fits with the natural environment. All reasonable and approved management techniques are applied to sustain capacity and use at high levels.

Level E - Level E management is applied to areas to achieve the maximum livestock production that the land can support. Any management technique can be applied as long as basic watershed values are protected. Some management activities, such as irrigating or large scale planting of nonnative grass species, may change the natural character of the land.

LOCAL ROADS - These roads connect terminal facilities with Forest collector or Forest arterial roads, or public highways. The location and standard are usually determined by that required to serve a specific resource activity, rather than travel efficiency.

LOCATABLE MINERALS - Those hardrock minerals which are mined and processed for the recovery of metals. May include certain nonmetallic minerals such as valuable and distinctive deposits of limestone or silica. May include any solid natural inorganic substance occurring in the crust of the earth, except for the common varieties of mineral materials and leasable minerals.

LOGICAL TIMBER MANAGEMENT AREA - A spatially locatable area of tentatively suitable timber that can logically be managed as a unit for timber production.

LONG-TERM - Action governed by the Forest Plan generally taking place over a period longer than ten years from the present.

LONG-TERM SUSTAINED YIELD CAPACITY (LTSY) - The highest uniform wood yield from lands being managed for timber production that may be achieved and sustained under a specified intensity of management consistent with multiple use objectives.

M

MAINTENANCE - The upkeep of all Forest development and transportation facilities, including surfaces and shoulders, parking and side areas, structures, and such traffic control devices as are necessary for its safe and efficient utilization [36 CFR 212.1, FSM 1023.4, 7732.05]. Maintenance is not for the purpose of upgrading a facility, but rather, to bring it to the originally constructed or subsequently reconstructed condition.

MANAGEMENT AREA - The entire Forest is divided into management areas. Each is described, and policies and prescriptions relating to their use are listed.

MANAGEMENT CONCERN - A matter of importance to the management of the National Forest System Lands, which is identified internally by the agency.

MANAGEMENT DIRECTION - A statement of multiple-use and other goals and objectives, the management prescriptions, and the associated standards and guidelines for attaining them. [36 CFR 219.3(r) NFMA Regulations]

MANAGEMENT EMPHASIS - A reflection of allocation choices for an analysis area or management area.

MANAGEMENT INDICATOR SPECIES - See "Indicator Species."

MANAGEMENT INTENSITY - The relative cost of a possible management direction and/or management practice.

MANAGEMENT OPPORTUNITY - A statement of general actions, measures, or treatments that address the public issue or management concern in a favorable way.

MANAGEMENT PRACTICE - A specific action, measure, or treatment.

MANAGEMENT PRESCRIPTION - Management practices selected and scheduled for application in a specific area to attain multiple use and other goals and objectives.

MANAGEMENT TEAM - Decision-making group consisting of the Forest Supervisor, Program Officers, and District Rangers.

MARKET-VALUED OUTPUTS - Goods and services valued in terms of what people are willing to pay for them rather than go without, as evidenced by market transactions.

MAUM'S (THOUSAND AUM'S) - A symbol to indicate 1,000 animal unit months or range forage.

MAXIMUM MODIFICATION (VQQ) - A visual quality objective meaning man's activity may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background.

MBF (THOUSAND BOARD FEET MEASURE) - A symbol to indicate 1,000 board feet of wood fiber volume, either in log form or after conversion into lumber.

MEAN ANNUAL INCREMENT - The total increase in girth, diameter, basal area, height, or volume of individual trees or a stand up to a given age divided by that age.

MERCHANTABLE VOLUME - Gross volume minus defect and volume in unutilized tops.

MESA - A tableland; a flat topped mountain or other elevation bounded on at least one side by a steep cliff.

MIH CODES - Management Information Handbook codes.

MINERAL DEVELOPMENT - The preparation of a proven deposit for mining.

MINERAL ENTRY - The right under the Mining Law of 1872 to enter nonwithdrawn public domain land, such as National Forests, and to explore for, extract, and sell certain locatable minerals; protected by the filing of a lode, placer, or mill site claim.

MINERAL ENTRY WITHDRAWAL - The exclusion of the right of possession of locatable mineral deposits by the locator on areas required for administrative sites by the Forest Service and other areas highly valued by the public. Public lands withdrawn from entry under the General Mining Laws and/or the mineral leasing laws.

MINERAL EXPLORATION - The search for valuable minerals on lands open to mineral entry.

MINERAL PRODUCTION - Extraction of mineral deposits.

MINERALS, COMMON VARIETY - Deposits which, although they may have value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts, do not possess a distinct, special economic value for such use over and above the normal uses of the general sum of such deposits. May include sand, stone, gravel, pumicite, cinders, pumice (except that occurring in pieces over 2 inches on a side), clay, and petrified wood.

MINERALS, LEASABLE - Coal, oil, gas, phosphate, sodium, potassium, oil shale, sulphur (in Louisiana and New Mexico), and geothermal steam.

MINERALS, LOCATABLE - Those hardrock minerals which are mined and processed for the recovery of the minerals; often metallic. May include certain nonmetallic minerals and uncommon varieties of mineral materials such as valuable and distinctive deposits of limestone or silica. May include any solid, natural inorganic substance occurring in the crust of the earth, except for the common varieties of mineral materials and leasable minerals.

MINIMUM LEVEL MANAGEMENT - The management strategy that would meet only the basic statutory requirements of administering unavoidable, nondiscretionary land uses, preventing damage to adjoining lands for other ownerships, and protecting the life, health, and safety of incidental users.

MINIMUM VIABLE POPULATION - See viable population.

MINING CLAIMS - That portion of the public estate held for mining purposes in which the right of exclusive possession of locatable mineral deposits is vested in the locator of a deposit.

MINING PATENTS - See "Patented Mining Claims."

MITIGATE - To lessen the severity.

MMBF (MILLION BOARD FEET MEASURE) - A symbol to indicate 1,000,000 board feet of wood fiber volume either in log form or after conversion into lumber.

MODIFICATION (VQO) - A visual quality objective meaning man's activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground.

MONITORING AND EVALUATION - The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been and how closely management standards have been applied.

MULTIPLE USE - The management of all various renewable surface resources of the National Forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

N

NATIONAL ENVIRONMENTAL POLICY ACT - An act to declare a National policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

NATIONAL FOREST MANAGEMENT ACT - A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest Plans and the preparation of regulations to guide that development.

NATIONAL FOREST SYSTEM LAND - National Forests, National Grasslands, and other related lands for which the Forest Service is assigned administrative responsibility.

NATIONAL RECREATION TRAILS - Trails designated by the Secretary of the Interior or the Secretary of Agriculture as part of the National system of trails authorized by the National Trails System Act. National recreation trails provide a variety of outdoor recreation uses in or reasonably accessible to urban areas.

NATIONAL REGISTER OF HISTORIC PLACES - A listing [maintained by the U.S. National Park Service] of areas which have been designated as being of historical significance. The Register includes places of local and State significance as well as those of value to the Nation as a whole.

NATIONAL WILD AND SCENIC RIVER SYSTEM - Rivers with outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

NATIONAL WILDERNESS PRESERVATION SYSTEM - All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.

NEPA - See "National Environmental Policy Act."

NFMA - See "National Forest Management Act."

NO ACTION ALTERNATIVE - The most likely condition expected to exist in the future if current management direction would continue unchanged.

NONCOMMERCIAL FOREST LAND - See "[Forest Land] Not Capable."

NONSTRUCTURAL RANGE IMPROVEMENT - A modification of existing vegetation to improve the grazing resource. For example, the uprooting of young pinyon/juniper trees that are invading grasslands.

NONCOMMODITY OUTPUTS - A resource output that cannot be bought and sold.

NONCONSUMPTIVE USE - Those uses of resources that do not reduce the supply. For example: Nonconsumptive uses of water included hydroelectric power generation, boating, swimming, etc.

NONDECLINING YIELD - A level of timber production planned so that the planned sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade.

NONFOREST LAND - Land that has never supported forests and lands formerly forested where use for timber utilization is precluded by development for other use. Includes areas used for crops, improved pasture, residential areas, improved roads of any width and adjoining clearings, and powerline clearing of any width. If intermingled in forest areas, unimproved roads and non-forest strips must be more than 120 feet wide, and clearing more than one acre in size to qualify as non-forest land. The non-forest land is classified as land not suited for timber production.

NONGAME - Species of animals which are not managed as a sport hunting resource.

NONMARKET VALUED OUTPUTS - Goods and services valued in terms of what reasonable people would be willing to pay rather than go without the output. Those obtaining the outputs do not pay all or part of what they would be willing to.

NONPOINT SOURCE POLLUTION - Sources of pollution that are diffuse in origin, their transportation into receiving water not well defined or constant, their discharge occurring at many diffuse locations, and depending heavily on weather conditions such as rainstorms or snowmelt. Pollution from Forest management is of this type.

NOXIOUS WEED - A noxious, destructive, or troublesome plant when found to be in epidemic proportions and of economic importance to threaten the public welfare.

OBJECTIVE - A clear and specific statement of planned results to be achieved within a stated time period. The results indicated in the statement of objectives are those which are designed to achieve the desired condition represented by the goal. An objective is measurable and implies precise time-phased steps to be taken and resources to be used which, together, represent the basis for defining and controlling the work to be done.

OBJECTIVE FUNCTION - A term in linear programming describing the criteria to be optimized. Examples of objective functions are: maximize timber, maximize livestock forage, or maximize present net value.

OBLITERATION - The returning of the land occupied by a road or trail to production.

OCCUPANCY TRESPASS - The illegal occupation or possession of National Forest Land or Forest Service property.

OLD GROWTH HABITAT - Essentially an undisturbed dense old age stand 165 years +, mixed conifer and Ponderosa pine stands characterized as follows:

Ponderosa pine - Stand size of between 100 to 300 acres and five chains or greater in width or grouping of stands in close proximity to provide contiguous habitat for interior-dwelling species.

Give priority to managing for old growth stands adjacent to lakes and streams in potential osprey nesting and bald eagle wintering sites.

Manage stands to achieve: At least 1400 trees per acres of 20 inches d.b.h. or greater in sites greater than or equal to 54 [minor]. At least 1400 trees per 100 acres of 14 inch d.b.h. or greater on site less than 54 [minor]. At least two-storied stands with approximately 60 GSL in the understory. At least 180 snags per 100 acres greater than or equal to 14 inches d.b.h. and 15 feet tall. At least two trees per acre of down woody materials 12 inches or greater in diameter and 16 feet long. Fuel treatment is not to be applied until 12 tons per acre is exceeded.

Mixed conifer (Douglas fir and white fir) - Stand size of between 100 to 300 acres and five chains or greater in width or grouping of stands in close proximity to provide contiguous habitat for interior-dwelling species.

Manage stands to achieve: At least 1600 trees per 100 acres of 20 inches d.b.h. or greater. At least two-storied stands with 100 GSL in understory. At least 300 snags per 100 acres of 20 inches d.b.h. and 15 feet tall. At least four trees per acre of down woody materials 12 inches or greater in diameter and 16 feet long. Fuel treatment is not to be applied until 12 tons per acre is exceeded.

ON-SITE SOIL LOSS - The movement of soil from the point at which it was formed to another location.

OPERATING PLAN - A written plan, approved by a Forest Officer, prepared by those engaged in mining activity on the Forest that will likely cause a significant disturbance of surface disturbance of surface requirements.

OPPORTUNITY COSTS - The value of the benefits foregone or given up due to the effect of choosing another management alternative that either impacts existing outputs or shifts resources away from other activities so that they are no longer produced and their benefits are lost.

ORV - Off-road vehicles; this includes all mechanical means of transportation; passenger cars, four-wheel-drive vehicles, trail bikes, and snowmobiles that are capable of traveling over land where no road exists.

OUTPUT COEFFICIENT - Values which relate an acre of land to a particular quantity of output in a specific period of time.

OUTPUTS - The goods, services, products, and concerns which are measurable and capable of being used to determine the effectiveness of programs and activities in meeting objectives. Also goods, end products, or services that are purchased, consumed, or utilized directly by people. A broad term for describing any result, product, or service that a process or activity actually produces.

OVERSTORY - That portion of the forest of more than one story forming the upper or uppermost canopy.

P

PAOT - See "Persons-At-One-Time."

PARTIAL RETENTION (VQQ) - A visual quality objective which in general means man's activities may be evident but must remain subordinate to the characteristic landscape.

PARTICULATES - Small particles suspended in the air and generally considered pollutants.

PATENTED MINING CLAIM - A mining claim to which the Federal Government has granted the claimant all surface and some or all mineral rights. Patented mining claims are private land and may be sold or used for other than mining activity, such as residential or recreational use.

PERENNIAL STREAM - Streams that flow throughout the year and from source to mouth.

PERMITTED GRAZING - Use of a National Forest range allotment under the terms of a grazing permit.

PERSONS-AT-ONE-TIME - A recreation-capacity measurement term indicating the number of people that can comfortably occupy to use a facility or area at one time.

PLANNING AREA - The area covered by a Regional or Forest Plan.

PLANNING CRITERIA - Standards, tests, rules, and guidelines by which the planning process is conducted and upon which judgements and decisions are based.

PLANNING HORIZON - The 200 year time frame for which goods, services and effects are projected in the development of the Forest Plan. The first 50 years are projected with more accuracy than the last 150 years.

PLANNING PROCESS - A system that records decisions and activities that result from the process of developing a Forest Plan, revision, or significant amendment.

PLANTATION - A forest crop or stand raised artificially, either by seeding or planting of young trees.

POLICY - A guiding principle upon which is based a specific decision or set of decisions.

POTENTIALLY ACCESSIBLE FUELWOOD AREAS - Pinyon/juniper fuelwood areas that are not roaded and are on 0 to 20 percent slopes.

POTHUNTING - Slang term used by professional archaeologists to describe illegal or non-professional collecting of relics.

PRACTICE - See "Management Practice."

PRECOMMERCIAL THINNING - The selective felling, deadening, or removal of trees in a young stand primarily to accelerate diameter increment on the remaining stems, maintain a specific stocking or stand density range, and improve the vigor and quality of the trees that remain.

PREPARATORY CUT - Removal of trees near the end of a rotation so as to permanently open the canopy and enlarge the crowns of seed bearers, with a view to improving conditions for seed production and natural regeneration, as typically in shelterwood systems.

PRESCRIBED FIRE - The intentional application of fire to wildlands fuels in either their natural or modified state under such conditions as allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further certain planned objectives of silviculture, wildlife management, etc.

PRESCRIPTION - See "Management Prescriptions."

PRESENT NET VALUE - The difference in net benefits and net costs, each discounted to the present.

PRESERVATION [VQO] - A visual quality objective that provides for ecological change only.

PRESUPPRESSION - Activities required in advance of fire occurrence to ensure effective suppression action. Includes (1) recruiting and training fire forces; (2) planning and organizing attack methods; (3) procuring and maintaining fire equipment; and (4) maintaining structural improvements necessary for the fire program.

PRIMITIVE ROS CLASS - A classification of the recreation opportunity spectrum characterized by an essentially unmodified environment, where trails may be present but structures are rare, and where probability of isolation from the sights and sounds of man is extremely high.

PRODUCTION POTENTIAL - The capability of the land or water to produce life-sustaining features [forage, cover, aquatics].

PRODUCTIVITY - See "Site Productivity."

PRODUCTS - Timber volume sold as roundwood or pulpwood.

PROGRAM DEVELOPMENT AND BUDGETING - The process by which activities for the Forest are proposed and funded.

PROPOSED ACTION - In terms of the National Environmental Policy Act, the project, activity, or action that a Federal agency intends to implement or undertake and is the subject of an environmental assessment.

PUBLIC ACCESS - Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use.

PUBLIC ISSUE - A subject or question of widespread public interest relating to management of National Forest System lands identified through public participation.

PUBLIC PARTICIPATION ACTIVITIES - Meetings, conferences, seminars, workshops, tours, written comments, response to survey questionnaires, and similar activities designed and held to obtain comments from the general public and specific publics about National Forest System land management planning.

R

RANGE ALLOTMENT - A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

RANGE BETTERMENT FUNDS - Portion of range grazing fees returned to the Forest to arrest range deterioration and improve forage condition.

RANGE CONDITION - The state of the plant community on a range site in relation to the potential natural plant community for that site. It is usually rated in the general categories of Poor, Fair, Good, or Excellent.

RANGE MANAGEMENT INTENSITY LEVELS - A = Currently unstocked Forest allotments. B = Allotments that are currently stocked, are estimated to be not more than 20 percent overstocked, and have minimal levels of management currently being applied. These allotments need additional intensity of management applied. C = Currently stocked allotments are estimated to be no more than 20 percent overstocked if any, and have management systems being supplied on the ground which should lead to resource improvement. Some stocking adjustments may still be needed upon evaluation of systems, and followup production and utilization studies. D = Currently stocked allotments, are not overstocked more than 20 percent, if any, and have intensive management systems being applied on the ground to correct resource problems. Stocking level may still need verification by production and utilization studies. E = Livestock use permitted by grazing permit, permitted use does not exceed forage production, full development and management for livestock production using cost effective techniques to maximize AUM output without regard for other multiple use constraints, i.e., full range of vegetative type conversion. X = Currently stocked allotments which are either more than 20 percent overstocked, have significant resource deterioration continuing, and will require major adjustments in stocking or greatly improved and intensified management systems or both stocking adjustment and improved management.

RANGER DISTRICT - Administrative subdivisions on the Forest supervised by a District Ranger who reports to the Forest Supervisor.

REAL INCOME - Real income is income based on real dollar values (values from which the effect of change in purchasing power of the dollar has been removed).

RECORD OF DECISION - A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action.

RECREATION CAPACITY - The number of people that can take advantage of the supply of recreation opportunity without substantially diminishing the quality of the experience sought after.

RECREATION OPPORTUNITY SPECTRUM - A land classification system which categorized National Forest land into six classes, each class being defined by its setting and by the probable recreation experience and activities it affords. The six classes in the spectrum are primitive, semi-primitive, non-motorized, semi-primitive motorized, roaded natural, rural, and urban.

RECREATION RESIDENCE SITE - House or cabin permitted on National Forest land for the recreational use of the owner, but not as a primary residence.

RECREATION VISITOR DAY (RVD) - Recreational use of National Forest land which aggregates twelve hours. It may consist of one person for twelve hours, two people for six hours, or any combination that totals twelve hours.

RECREATIONAL RIVER - Wild and Scenic Rivers Act Usage. Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

REFORESTATION - The natural or artificial restocking of an area with forest trees.

REGENERATION - (1) The actual seedlings and saplings existing in a stand. (2) The act of establishing young trees naturally or artificially.

REGENERATION CUT - Removal of trees with the intention of establishing a new crop of seedlings.

REGIONAL FORESTER - The official responsible for administering a single Region. The responsible official for the Forest Plan.

REGIONAL GUIDE - See "Regional Land and Resource Management Plan."

REGIONAL LAND AND RESOURCE MANAGEMENT PLAN - The plan developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all natural resource management activities and established management standards and guidelines for the National Forest System lands of a given Region. It also disaggregates the RPA objectives assigned to the Region to the Forests within that Region.

REGULATED - Forest land managed for timber production under sustained yield principles.

REGULATIONS - 36 CFR refers to the Code of Federal Regulations for implementing the National Forest Management Act.

RESEARCH NATURAL AREAS - An area in as near a natural condition as possible which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. This area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.

RESOURCE DATA BASE - Information about resources stored in a computerized system.

REST-ROTATION - A grazing system in which the pastures being rotated receive nonuse for a period of plant recovery.

RETENTION (VQO) - A visual quality objective which in general, means man's activities are not evident to the casual forest visitor.

REVEGETATION - The reestablishment and development of a plant cover. This may take place naturally through the reproductive processes of the existing flora or artificially through the direct action of man.

RIGHT-OF-WAY - Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project facility passing, over, upon, under, or through such land.

RIPARIAN - Referring to land adjacent to perennial streams, lakes, and reservoirs and including other well developed riparian vegetation (primarily intermittent streams). This land is specifically delineated by the transition ecosystem and defined by soil characteristics and distinctive vegetation communities that require free and unbound water.

RIPARIAN CONDITION TRANSECTS - A sampling system addressing riparian ecosystem inventory, classification, and evaluation. It includes assessment of tree overstory, shrub midstory, understory, stream bottom, streambank stability, stream sinuosity, gradient, and cross section.

ROAD DENSITY - The measure of the degree to which the length of road miles occupies a given land area, i.e., 1 mi/sq. mi. is one mile of road within a given square mile.

ROAD MAINTENANCE LEVELS - Levels are described as follows:

Level 1. This level is assigned to intermittent service roads during the time management direction requires that the road be closed or otherwise blocked to traffic. Basic custodial maintenance is performed to protect the road investment and to keep damage to adjacent resources to an acceptable level. Drainage facilities and runoff patterns are maintained. Roads being maintained at this level must be closed or blocked to traffic.

Level 2. This level is assigned where management direction requires that the road be open for limited passage of traffic. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Roads in this level are normally characterized as single lane, primitive type facilities intended for use by high clearance vehicles. Passenger car traffic is not a consideration.

Level 3. This level is assigned where management direction requires the road to be open and maintained for safe travel by a prudent driver in a passenger car. Traffic volumes are minor to moderate; however, user comfort and convenience is not considered a priority. Roads in this level are characterized by low speed, single lane with turnouts, and spot surfacing. Some roads may be fully surfaced with either native or processed material.

Level 4. This level is assigned where management direction requires the road to provide a moderate degree of user comfort and convenience at moderate travel speeds. Traffic volumes are normally sufficient to require a double lane aggregate surfaced road. Some roads may be single lane and some may be paved.

Level 5. This level is assigned where management direction requires the road to provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced.

ROADED NATURAL ROS CLASS - A classification of the Recreation Opportunity Spectrum that characterizes a predominantly natural environment with evidence of moderate permanent alternate resources and resource utilization. Evidence of the sights and sounds of man is moderate, but in harmony with general environment. Opportunities exist for both social interaction and moderate isolation from sights and sounds of man.

ROS CLASS - See "Recreation Opportunity Spectrum."

ROTATION - The number of years required to establish, including the regeneration period, and grow timber crops to a specified condition or maturity for regeneration harvest.

ROUNDWOOD - Trees that are used without being milled (fence posts, telephone poles, pulpwood, etc.).

RPA - The Forest and Rangeland Renewable Resources Planning Act of 1974. Also refers to the National Assessment and Recommended Program developed to fulfill the requirements of the Act. The most recent recommended program was done in 1980.

RPA NATIONAL ASSESSMENT - A document compiled by the Secretary of Agriculture every ten years which contains facts and analyses to develop and guide public and private forest and rangeland policies and programs.

RPA NATIONAL PROGRAM - A document compiled by the Secretary of Agriculture every five years which outlines Forest Service programs for National Forest System management, cooperative assistance to States and private landowners, and research.

RURAL ROS CLASS - A classification of the Recreation Opportunity Spectrum that characterizes an area in which the sights and sounds of man are prevalent and the landscape has been considerably altered by the works of man.

RVD - See "Recreation Visitor Day."

SALVAGE CUTTING - Done to remove trees in imminent danger of being killed or damaged by injurious agents. Dead and dying trees are included in salvage cuttings.

SAPLING - As used in timber survey, a size class definition; trees 1.0 to 4.9 inches at DBH.

SATISFACTORY RANGE CONDITION - Rangeland in range condition class of at least fair with stable or upward trend.

SATISFACTORY WATERSHED CONDITION - This is a situation where the existing ground cover exceeds the tolerance level and the watershed or land unit is hydrologically stable.

SAWTIMBER - Trees that will yield logs suitable in size and quality for the production of lumber.

SCENIC EASEMENT - Relative to the Wild and Scenic Rivers Act (P.L. 93-621) 1975, and by definition of the act; the right to control the use of land (including the air space above such land) within the authorized boundaries of a component of the Wild and Scenic Rivers System, for the purpose of protecting the natural qualities of a designated wild, scenic or recreational river area, but such control shall not affect, without the owner's consent, any regular use exercised prior to the acquisition of the easement.

SCENIC RIVER - Wild and Scenic Rivers Act usage. Those rivers or sections of rivers that are free of improvements, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

SCOPING PROCESS - The public and management activities used to determine the range of actions, alternatives, and impacts to be considered in an environmental impact statement.

SEDIMENT - Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

SEED CUT - Removal of trees in a mature stand so as to affect permanent opening of its canopy and so provide conditions for securing regeneration from the seed of trees retained for that purpose; the first of the shelterwood cuttings under a shelterwood system.

SEEDLING - As used in timber survey, a size class definition; trees less than one inch at DBH.

SELECTION CUTTING - The annual or periodic removal of trees (particularly the mature), individually or in small groups from an uneven-aged forest in order to realize the yield and establish a new crop of irregular constitution.

SEMI-PRIMITIVE ROS CLASS - An area characterized by moderate opportunity for solitude in a predominately unmodified natural environment, with a moderate degree of trail maintenance.

SEMI-PRIMITIVE MOTORIZED ROS CLASS - A classification of the Recreation Opportunity Spectrum characterized by moderately dominant alterations by man, with strong evidence of primitive roads and/or trails.

SEMI-PRIMITIVE NON-MOTORIZED ROS CLASS - A classification of the Recreation Opportunity Spectrum characterized by few and/or subtle modifications by man, and with high probability of isolation from the sights and sounds of man.

SENSITIVE AREAS - Areas of high erosion hazard, areas that may be susceptible to compaction, or areas of unstable slopes.

SENSITIVITY LEVEL - As used in Cultural Resource Management; the degree of cultural resource development potential and/or the degree of conflict with other uses for a given area.

SENSITIVITY LEVEL - As used in Visual Quality Management; a particular degree or measure of viewer interest in the scenic qualities of the landscape.

SENSITIVE SOILS - These soils have the potential to lose more than the tolerance soil loss amount. This may be due to the type of parent material from which the soils has been formed (volcanic sediments, or Gila conglomerate); the position of the soil on the landscape such as a drainage bottom or very steep slopes; or the lack of effective ground cover.

SHEET EROSION - The removal of a fairly uniform layer of soil from the land surface by runoff water, without the development of conspicuous water channels.

SHELTERWOOD CUT - An even-age regeneration system where the mature trees are removed in two or more cuts. (1) The preparatory cut removes a portion of the mature trees and is intended to make the remaining trees more wind firm; preparatory cuts may be omitted where windfall is not a major concern. (2) The seed cut removes additional trees with the intent of allowing additional sunlight to reach the forest floor. The new trees become established following the seed cut. (3) The removal cut removes the last of the mature trees.

SHELTERWOOD CUTTING - Designed to establish a new crop under a remaining portion of the old stand which provides both a seed source and protection of the site and seedlings.

SILVICULTURAL EXAMINATION SURVEYS - Procedures consisting of seven types of surveys used to collect data on Forest stands. Types 1 through 4 are conducted by using intensive examinations consisting of modification to procedures used in Type 1 through 4 surveys.

SILVICULTURAL SYSTEM - A combination of interrelated actions whereby forests are tended, harvested, and replaced. The combination of management practices used to manipulate the vegetation results in forests of distinctive form and character, and this determines the combination of multiple resource benefits that can be obtained. Systems are classified as even-aged and uneven-aged.

SITE PREPARATION - Preparation of the ground surface before planting or preparing a seedbed for natural regeneration; includes removal of unwanted vegetation, slash, stumps, and roots from a site.

SKID TRAIL - Travelway used to drag or transport trees from the stump to the road.

SLASH - Debris left after logging, pruning, thinning, or brush cutting, and large accumulation of debris after wind or fire. It includes logs, branches, bark, and stumps.

SMALL GAME - Birds and small mammals normally hunted or trapped.

SNAG - Standing dead tree larger than six inches in diameter at breast height.

SOFT SNAG - A standing dead tree from which the leaves and most of the branches have fallen and which has started to rot internally.

SOIL LOSS - The predicted net average annual soil loss from a site due to sheet and rill erosion under variable canopy cover, effective ground cover conditions, slope-effect parameters, precipitation, and management parameters.

SOIL LOSS TOLERANCE - The maximum average annual rate of soil erosion (whether from rainfall or wind) that will permit a high level of crop productivity to be sustained economically and indefinitely. T factors are used to represent the amount of soil loss that should be permitted on a given soil.

SOIL PRODUCTIVITY - The capacity of a soil to produce a specific crop such as fiber, forage, etc., under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season.

SOIL SURVEYS - Systematic examinations of soils in the field and in laboratories; such exams are at differing "levels" and interpretation according to their adaptability for various crops, grasses, and trees; there are seven classed orders of surveys, with order one being the highest intensity.

SPATIAL FEASIBILITY - The capacity of a land allocation to be practically implemented on the ground.

SPECIAL USE PERMIT - A permit issued under established laws and regulations to an individual, organization, or company for occupancy or use of National Forest land for some special purpose.

SQUIRREL NEST HABITAT - Ponderosa pine stands, [generally on 0 to 40 percent slopes] characterized by trees 12 inch plus DBH and stand basal areas between 100 and 160 square feet B.A.

STAND - An aggregation of trees or other growth occupying a specific area and sufficiently uniform in composition [species], age arrangement, and condition as to be distinguishable from the Forest or other growth on adjoining areas.

STANDARD - A principle requiring a specific level of attainment, a rule to measure against.

STATE AIR QUALITY REGULATIONS - The legal base for control of air pollution sources in that State. Prescribed burning is generally covered under these regulations.

STRUCTURAL RANGE IMPROVEMENT - Any type of range improvement that is man-made [fences, corrals, etc.].

SUBSOIL - The soil found below the plowed soil [or its equivalent of surface soil], in which roots normally grow.

SUCCESSION - An orderly process of biotic community development that involves changes in species, structure, and community processes with time; it is reasonably directional and, therefore, predictable.

SUITABILITY - The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

SUITABLE RANGE - Range which is accessible to livestock or wildlife, and which can be grazed on a sustained yield basis without damage to other resources.

SUITABLE TIMBER LANDS - Forest lands to be managed for timber production on a regulated basis.

SUPPLY - A schedule of the quantity of a product or forest output that will be produced at various prices.

SUPPRESSION (FIRE SUPPRESSION) - Any act taken to slow, stop, or extinguish a fire. Examples of suppression activities include line construction, backfiring, and application of water or chemical fire retardants.

SURFACE SOIL - The uppermost part of the soil ordinarily moved in tillage or its equivalent in uncultivated soils, ranging in depth from five to eight inches. Frequently designated as the plow layer.

SUSTAINED YIELD - The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the National Forest without impairment of the productivity of the land.

T

T & E - See "Threatened and Endangered Species."

TARGETS - Objectives assigned to the Forest by the Regional Plan.

TECHNICALLY SUITABLE FOREST LAND - Land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions. There is reasonable assurance that such lands can be adequately restocked as provided in CFR 219.13(h)(3).

TEMPORARY ROAD - A road that will be physically obliterated and seeded after its primary use is completed (i.e., spur road for logging); it will never be used again.

THERMAL COVER - Cover used by animals to reduce effects of weather; for elk, a stand of coniferous trees 40 feet or more tall with an average crown closure of 70 percent or more.

THINNING - Cutting made in an immature crop or stand, primarily to accelerate the diameter increment (annual growth) of the residual trees, but also by suitable selection, to improve the average form of the trees that remain.

THREATENED AND ENDANGERED SPECIES - A species or subspecies of animals or plants whose prospects of survival and reproduction are in immediate jeopardy, or likely to become so within the foreseeable future. Threatened species are identified by the Secretary of Interior in accordance with the 1973 Endangered Species Act.

TIERING - Refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements) with subsequent narrower statements of environmental analyses (such as regional or basinwide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared.

TIMBER BASE - The lands within the Forest capable, available, and suitable for timber production.

TIMBER HARVEST SCHEDULE - The quantity of timber planned for sale and harvest, by time period, from the area of land covered by the Forest Plan. The first period, usually a decade, of the selected harvest schedule provides the allowable sale quantity. Future periods are shown to establish that sustained yield will be achieved and maintained.

TIMBER PRODUCTION - The growing, tending, harvesting, and regeneration of regulated crops of industrial wood. Industrial wood includes logs, bolts, or other round sections cut from trees for industrial or consumer use, except fuelwood.

TIMBER SALE - See "Commercial Timber Sale."

TIMBER STAND IMPROVEMENTS (TSI) - A loose term comprising all intermediate cuttings made to improve the composition, constitution, condition, and increment of a timber stand.

TIMBER STRATA -- Synonymous with stand -- see "Stand."

TIME PERIOD -- With regard to this planning effort, the 200 year planning horizon is comprised of eight time periods. The first five are ten year time periods, and the final three are 50 year time periods.

TRACTOR LOGGING -- Any logging method which uses a tractor as the motive power for transporting logs from the stumps to a collecting point--whether by dragging or carrying the logs.

TRAIL DIFFICULTY LEVELS -- The degree of challenge a trail presents to an average user's physical ability and skill. Difficulty is a function of trail condition and route location factors such as alignment, steepness of grades, gain and loss of elevation, availability of drinking water, and amount and kind of natural barriers that must be crossed. Difficulty levels apply to all the types of trails discussed in the handbook. Categories are easiest, more difficult, and most difficult.

TRAILHEADS -- The parking, signing, and other facilities available at the terminus of a trail.

TRAIL MAINTENANCE LEVELS -- The five trail maintenance levels are defined as follows:

Level 1 Trails maintained for primitive experience level. Custodial care only. No tread maintenance. Drainage functional and not likely to fail. Trail sides not brushed but tread is kept passable. Small slides may remain except for those with erosion potential. Structures maintained as needed.

Level 2 Trails maintained for near-primitive experience level. Tread maintained for public safety. Logs or similar rustic structures may be provided at stream crossings. Drainage same as Level 1. Signing at minimum level commensurate with level of trail use. Unit of work is the number of miles of trail maintained at Level 2.

Level 3 Trails maintained for intermediate experience level. Tread maintained for public safety and user convenience. Drainage same as Level 1. Trailsides brushed out at Handbook standards. Structures maintained to original design standards. Signing same as Level 2. Unit of work is the number of miles of trail maintained at Level 3.

Level 4 Trails maintained at relatively high standards to provide for public safety and convenience. Tread relatively smooth, firm and may require stabilization. Signing at high level, all other elements same as Level 3. These trails are generally maintained for family or senior citizen use. Unit of work is the number of miles of trail maintained at Level 4.

Level 5 Trails maintained for high use and experience levels, including special purposes such as VIS trails, bicycle trails, trails to major vista points, trails for the handicapped, etc. Basic care same as Level 4 but patching of paved tread may be needed annually. Trail sides maintained to meet high visual quality standards by brushing and clean-up of debris beyond the trail limits. Vistas are maintained. Unit of work is the number of miles of trail maintained at Level 5.

TRANSITORY RANGE -- Land that is suitable for grazing use of a nonending nature over a period of time. For example, on particular disturbed lands, grass may cover the area for a period of time before being replaced by trees or shrubs not suitable for forage.

TRESPASS -- The act of going on another's land or property unlawfully.

TSI -- See "Timber Stand Improvement."

TURKEY ROOST HABITAT - Ponderosa pine and mixed conifer stands characterized by trees of 22 inch" plus diameter at breast height and stand basal areas from 90 to 160 square feet B.A.

U

UNCONSTRAINED MAXIMUM - Level of management defined as the highest possible level of a given output along with the costs associated with achieving it.

UNDERSTORY - The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

UNEVEN-AGED SILVICULTURE SYSTEMS - The combination of action that result in the creation of forests or stands of trees, in which trees of several or many ages grow together. Cutting methods that develop and maintain uneven-aged stands are individual tree and group selection cutting methods:

- [1] Individual Tree Selection Cutting. The removal of selected trees of all size classes on an individual basis.
- [2] Group Selection Cutting. The removal of selected trees of all size classes in groups of a fraction of an acre up to two or three acres.

UNPATENTED MINING CLAIM - A claim made by a qualified person for possession of locatable minerals on public domain land (e.g., National Forests); a properly recorded claim entitles the claimant to reasonable access to the claim and exclusive right to extract and sell valuable minerals from the claim. Unpatented mining claims may be occupied and used solely for mining and related activity.

UNREGULATED HARVEST - This harvest is not charged against the allowable sale quantity, and includes occasional volumes removed that were not recognized in calculations of the allowable sale quantity, such as cull or dead material and noncommercial species and products. It also includes all volume removed from nonsuitable areas. Harvests from nonsuitable areas will be programmed as needed for objectives such as research on experimental forests, to meet multiple use objectives such as research on experimental forests, to meet multiple use objectives other than timber production, and for improvement of administrative sites.

UNSATISFACTORY RANGE CONDITION - Rangeland in range condition of poor or very poor and of fair in a downward trend.

UNSATISFACTORY WATERSHED CONDITION - This is a situation where the existing ground cover is less than the tolerance ground cover. The watershed or land unit is hydrologically unstable. Excessive runoff or erosion will permanently impair the hydrologic function unless corrective action is taken.

UNSUITABLE LANDS - Lands not allocated to timber management or not suitable as determined through the suitability analysis.

URBAN ROS CLASS - A classification of the Recreation Opportunity Spectrum in which the natural setting is dominated by man-made structures and the sights and sounds of man predominate.

UTILITY CORRIDOR - A tract of land of varying width forming a passageway through which various commodities such as oil, gas, and electricity are transported.

UTILIZATION STANDARDS - Standards established to guide the use and removal of timber and measured in terms of minimum diameter at breast height, minimum length, and percent soundness.

V

VEGETATIVE MANIPULATION - The change of one vegetation type to another. It can be done by a tractor, chemicals, or fire. Usually, this is done to increase forage for livestock and can be a beneficial tool for wildlife.

VIALE POPULATIONS - A wildlife or fish population of sufficient size to maintain its existence over time in spite of normal fluctuations in population levels.

VIS [VISITOR INFORMATION SERVICES] - A service provided to the public by National Forests in which the public is supplied with information regarding opportunities or activities on National Forest land; usually but not restricted to recreational opportunities.

VIS SITE - Visitor Information Service Site which provides interpretative information [directional, historical, statistical], located at Forest historical sites, overlook sites, or special interest areas.

VISITOR DAY - The use of an area for a total of 12 person hours by one or more people, either continuously or over several visits.

VISUAL QUALITY OBJECTIVE [VQO] - A desired level of excellence based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.

- (1) Preservation [P]. In general, human activities are not detectable to the visitor.
- (2) Retention [R]. In general, human activities are not evident to the casual Forest visitor.
- (3) Partial Retention [PR]. In general, human activities may be evident but must remain subordinate to the characteristic landscape.
- (4) Modification [M]. Human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in middleground or background.
- (5) Maximum Modification [MM]. Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

VISUAL RESOURCE - The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

W

WATER YIELD - The total net amount of water produced on the Forest including streamflow and groundwater recharge.

WATERSHED - The entire area that contributes water to a drainage or stream.

WATERSHED CONDITION - A description of the health of a watershed, or portion thereof, in terms of the factors that affect hydrologic function and soil productivity.

WATERSHED STRUCTURE - Any structural treatment such as an earthen dam, rock check dam, contour trench, or channel shaping which provides watershed stability until vegetative cover is reestablished.

WAUM [Wildlife Animal Unit Month] - A wildlife habitat use equivalent of herbaceous forage and cover.

WETLANDS - Areas with shallow standing water or seasonal to year-long saturated soils [includes bogs, marshes, and wet meadows].

WILD RIVER - Wild and Scenic Rivers Act usage. Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.

WILDERNESS - Under the 1964 Wilderness Act, wilderness is undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. It is protected and managed so as to preserve its natural conditions which [1] generally appear to have been affected primarily by the forces of nature with the imprint of man's activity

substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and confined type of recreation; (3) has at least 5,000 acres or is of sufficient size to make practical its condition; and (4) may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.

WILDERNESS STUDY AREA (WSA) - One of the areas selected by Congress from an inventory of unroaded and undeveloped National Forest lands as having apparent high qualities for wilderness. They will be studied to determine whether they should be recommended for addition to the National Wilderness Preservation System.

WILDFIRE - Any wildland fire that requires a suppression action. This includes all fires not meeting the requirements of a prescribed fire.

WILDLIFE HABITAT - The sum total of environmental conditions of a specific place occupied by a wildlife species or a population of such species.

WILDLIFE STRUCTURE - A site specific improvement of a wildlife or fish habitat, i.e., spring development or dugout to provide water, brushpile for cover, nestbox for birds, or rock and log placement in a stream for fish cover and pool creation.

WILLINGNESS-TO-PAY - The value of an increment of an output, of a good, service, or amenity, and is equal to the maximum amount the consumer is willing to pay for that increment. It is measured as the difference between the value of the marginal product (derived demand) for the output and the non fee costs.

WINTER RANGE - The area occupied by an animal species during the winter.

WITHDRAWAL - Withholding an area of Federal land from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program.

WORK CENTER - A facility where crews assemble and are directed toward their various work assignments. A work center can be located at an administrative site. A work center normally will include storage and warehousing facilities and may include crew housing.

Appendix

A. Issue, Concern and Opportunity Identification Process

Overview

Public issues, management concerns, and resource use and development opportunities (ICOs) drive the planning process. If no significant ICOs had been identified, current management would have been confirmed with only minor changes. The fact that significant ICOs were identified meant that conflicts in resource uses and management activities would have to be addressed. The purpose of the Proposed Action is to change current management direction within legal and fiscal constraints to address the identified ICOs. The management program proposed by the Forest to address the ICOs is contained in the Forest Plan.

The process used to identify the significant ICOs is discussed in detail in a technical report titled Issues, Concerns, and Opportunities Identification Process, available for review at all Gila National Forest Offices during regular office hours and at the Regional Forester's Office in Albuquerque, New Mexico. The report is available by writing to: LMP, Gila National Forest, 2610 N. Silver St., Silver City, New Mexico or by calling (505)388-1986.

The documentation for the ICOs identification process contains a detailed record of management's intentions and activities; response involvement from the public, other agencies, and Native Americans response and involvement, and a list of persons known to be affected by or interested in the Plan. The process record is discussed in detail in the technical report, Issues, Concerns, and Opportunities Identification Process, and is available for public review at the Forest Supervisor's Office.

The discussion that follows is a summary of the technical report on the ICOs and is meant to give the reader the broadest possible overview of a detailed and thorough process. Reviewers are invited to contact the Forest if more detail is required.

Introduction

Forest Plans developed from the planning process will direct management of the National Forest System. The public is encouraged to participate throughout the process for their own benefit and to help Forest managers make management decisions that reflect public attitudes and desires.

The intent of public involvement is to broaden the information base upon which decisions are made; to consider the public's advice and counsel; to ensure that the Forest Service recognizes the public's needs, concerns, and values; to inform the public about planning activities; and to inform the public about Forest Service programs and proposed actions. Land and resource management public involvement activities comply with the requirements of NFMA [36 CFR Part 219] and of NEPA [40 CFR Parts 1500-1508].

Public Involvement Plan

The Forest developed a Public Involvement Plan as part of the Work Plan to implement direction provided in NFMA, NEPA, and RPA. The Public Involvement Plan detailed activities, assigned responsibilities and due dates, and recorded accomplishments for involving the public at each step in the process.

ICO's Identification

A notice of Intent to prepare an EIS appeared in the Federal Register in February of 1980.

Public involvement activities for the Gila LMP began in November 1979. In an effort to find an understandable format for public input, the Gila Forest employees were contacted and asked to identify issues and management concerns. This request generated 24 preliminary issues and 20 optional decision criteria. These were organized under general topic headings (i.e. water rights, grazing, timber, wildlife). The list of topic headings with associated preliminary issue statements were presented to the Interdisciplinary Team and Management Team for review and screening in December, 1979. The resulting revisions were sent to Districts and the S.O. staff for review and comment. No comments were received; therefore, these became the tentative Issues and Concerns that were put into the Public Involvement Workbook.

As indicated in the public involvement plan, the first step in attempting to contact the outside public was to mail a card to the people on existing Forest

mailing lists asking them if they wished to receive information regarding Forest planning. At the same time a news release with a cut off response form was published in 16 newspapers in the Gila area of influence. These contacts resulted in 2,374 requests to be put on the mailing list.

Next, the Public Involvement Workbook was compiled. This workbook contained a short explanation of the planning steps, a definition of an "issue", an explanation of how the public response to issues would be evaluated, a list of the preliminary issues identified by Forest Service personnel (with space to respond), a space to add additional issues and concerns, and a list of the locations where the workshops would be held. The workbooks were mailed to all people on the mailing list and were also used in the workshops. In addition to notifying individuals on the mailing list, the schedule for the workshops was published in 14 newspapers and announced on 18 radio and TV stations. The public workshops were held in seven locations within the planning area. A total of 369 completed workbooks were received from the workshops.

When the comments arrived at the Supervisor's Office, they were coded and entered in the computer by last name of the individual submitting the comment. They were also entered by category (ie. like/dislike and general/specific). After all comments were coded and sorted, a group of rangers reviewed the comments. They looked for additional issues that were not surfaced by the Forest, the comments on the issues identified in the brochure, and the recommendations associated with the issues. From this information they formulated the issue statements and decision criteria for Management Team review. After the Management Team decided on the suggested recommended final issues and decision criteria presented in this plan, each public statement was compared to the suggested final issues to insure that all concerns recommended and proposed solutions were addressed. The final issues were sent to the people that responded. See the Gila Public Involvement Plan for further details.

After review by the Regional Office, these issues were rewritten and incorporated with the 17 national concerns. An additional issue was included from the Regional Guide concerning riparian habitat that had not been identified as an issue or concern in the initial issue identification process. The issues are listed in the Final ICOs section of this appendix. The issues were approved by the Regional Forester on December 4, 1980. A pamphlet entitled "Forest Issues and Decision Criteria Resulting From Public Involvement" was then sent to all the individuals whose names were on the land management planning mailing list.

Consultation With Others

Other agencies and Native American Tribes were consulted regularly throughout throughout the process. Every jurisdiction that could reasonably be expected to be affected in any way by management activities on the Forest was contacted to describe the planning process, solicit input, and gather advice on developing evaluation criteria.

Following is a complete list of other governmental agencies and Indian Tribes contacted during the initial phase of public involvement. Chapter Six of this Document (Consultation With Others) provides a comprehensive list of the agencies, organizations, businessmen, and individuals currently on the Gila planning mailing list.

FEDERAL AGENCIES

National Park Service - ONR
Farmers Home Administration, USDA - Phoenix
Council on Environmental Quality
Geological Survey - Conservation Division - Sacramento, CA.
U.S. Dept. of Commerce - National Weather Service
Federal Aviation Administration
Federal Highway Service
USDI Bureau of Indian Affairs - Mescalero Agency
USDI Bureau of Land Management - Phoenix
Bureau of Land Management - Las Cruces
Soil Conservation Service - Las Cruces

FEDERAL AGENCIES (Continued)

Bureau of Land Management - Santa Fe
Bureau of Indian Affairs - Phoenix
Governor Edison Laselute - Zuni
Ron Lupe - White Mountain Apache Tribe
Mescalero Apache Tribal Council
Acoma Pueblo Council
All Indian Pueblo Council - Albuquerque
Laguna Pueblo Council
Farmers Home Administration
U.S. Department of Agricultural Survey
Sent to: NL Baroid - Houston
Bureau of Customs - El Paso
Bureau of Reclamation - Phoenix
U.S. Bureau of Sports, Fisheries, & Wildlife
U.S. Department of Justice, Immigration, & Naturalization
Rocky Mountain Forest & Range
Small Business Administration
Bureau of Land Management - Santa Fe
Soil Conservation Service - Phoenix
USDI U.S. Geological Survey
Soil Conservation Service - Reserve
Farmers Home Administration - Socorro
Bureau of Land Management - Socorro
U.S. Department of Health, Education, & Welfare

STATE AGENCIES

N.M. State Archeologist
N.M. Department of Aviation
N.M. Department of Development
N.M. Department of Parks and Recreation
State of New Mexico Environmental Improvement Agency
N.M. Department of Agriculture
N.M. Department of Human Services
N.M. Division of Forestry
N.M. Game and Fish Department
N.M. State Police
N.M. State Engineer
N.M. Soil & Water Conservation Division
Southwest N.M. Services to Handicapped Children and Adults [SWSH]
State of New Mexico Fort Bayard Medical Center
Southwest New Mexico Council of Governments
N.M. Department of Education
N.M. State Highway Department
N.M. Forest Resource Planner
Urban Development
N.M. Bureau of Mines and Mineral Resources
Water Resources Division
N.M. Farm and Livestock Division
N.M. Conservation Council
N.M. Legal Services Support Program
Mrs. Jo Youngblood - AZ, State Clearinghouse
Anita Hisenberg - NM, State Clearinghouse
Southwest New Mexico RC & D

LOCAL GOVERNMENT AGENCIES

Catron County Airport Commission
Catron County Board of Supervisors
Catron County Commissioners
Grant County Commissioners
Hidalgo County Commissioners
Sierra County Commissioners
City of T or C

LOCAL GOVERNMENT AGENCIES (Continued)

Town of Hurley
Village of Central
Village of Bayard
Village of Reserve
Otero Soil & Water Conservation Division
Carlsbad Chamber of Commerce
Eunice Chamber of Commerce
Lordsburg Chamber of Commerce
Artesia Chamber of Commerce
Silver City Public Library
Roswell Public Library
Alamogordo Public Library

FEDERAL OFFICIALS

Honorable Manuel Lujan, Jr. - Representative
Senator Pete V. Domenici
Honorable Joe Skeen - Representative
Senator Harrison Schmitt
Honorable Harold L. Runnels - Representative

STATE OFFICIALS

Murray Ryan
Ben Altamirano
Thomas P. Foy
Aubrey Dunn

LOCAL OFFICIALS

Mayor John Lopez, Silver City
Catron County Commissioner
Mayor Charles Smith, Bayard
Mayor Henry Turrey, Central

The purpose of these contacts was to explain the planning process and obtain input for development of issues.

Upon completion of the initial phase of obtaining input for issues and concerns, the following individuals and agencies were contacted. During these contacts questions were answered, the status of the plan was explained, and the projected time frames were discussed.

Gila Grazing Advisory Board - An update of where the Forest was in the process and to inform the board of our time frame for publishing draft statement and their input needs on draft.

Southwestern New Mexico Rural Conservation and Development District - Respond to process questions, status of where Forest was in the process and reviewed issues as result of initial public involvement.

Bureau of Land Management (Las Cruces Dist.) - Land Management Planning process and future Bureau of Land Management Wilderness Study.

Bureau of Land Management (Socorro Dist.) - Land Management Planning process and computer modeling.

State of New Mexico Economic Development - Discussion with this state organization on recreation futures.

State of New Mexico - State forestry discussion and coordination of fire analysis and benefits.

Wilderness Society - Gila committee discussion on LMP process and Wilderness Study Areas.

State Land Office - LMP process and modeling.

New Mexico Dept. of Game and Fish - LMP process and status of Gila in process.

Bureau of Land Management (Safford, Arizona District Office) - Land Management Planning process and coordination of Wilderness Study and Bureau of Land Management Wilderness Study - Hells Hole.

Bureau of Land Management Las Cruces (3 contacts).

- 1) To explain issues and concerns & opportunities and how we analyzed public involvement.
- 2) To explain modeling process and bring them up to date on where we were in process.
- 3) To inform about where we were in process.

Bureau of Reclamation (1 contact).

- 1) To look at Connor Dam site and review the implications of its construction. Also brought them up to date on planning schedule.

As part of the process, the ID Team reviewed the plans of other agencies at all levels as well as the plans and programs of affected Tribes to ensure reasonable coordination between multiple planning efforts. A list of the other agency plans and how they were considered in the planning process follows:

BLM - Las Cruces/Lordsburg Resource Area Draft Management Framework Plan - Reviewed because of lands adjacent to Forest. Had no impact on our plan.

BLM - Las Cruces/Lordsburg Resource Area Draft Management Framework Plan Amended - Reviewed because BLM has lands adjacent to Forest.

BLM New Mexico Wilderness Study Area proposed - Reviewed to determine proximity of BLM Wilderness proposals to Gila NF. BLM proposed wilderness was considered when evaluating Hells Hole and San Francisco River Wilderness Study Areas to determine recommendation.

BLM West Socorro Rangeland Management Program - Reviewed to determine land use on adjacent lands. Had no impact on Gila Plan.

The final part of the Consultation section lists all other consultations and contacts that were made. It includes a significant number of interest groups and individuals outside the general public involvement contacts. Discussion of the purpose, number, and nature of the contacts is included:

Washington D.C. Wilderness Group Representative Peter Kirby. Mr. Kirby contacted us regarding the Wilderness Study Areas. Gave him plan schedule and informed him that we would not have recommendation on study areas until Draft Plan was complete.

Numerous contacts with Dave Hammel of Southwest Forest Industries to inform him of our progress.

Meeting with Southwest Industries representatives to review our modeling process and to review in the field our tentatively suitable lands inventory.

Southwest New Mexico Resource Conservation & Development; February 28, 1980. Subject: Encourage participation. Advised them of dates and location of public workshops to be held March, 1980.

State Engineers Office, New Mexico State Dept. of Natural Resources. Subject: Wild and Scenic River information.

USDI Bureau of Reclamation, Phoenix Office, January, 1980. Subject: Upper Gila water supply study, and Hooker Dam investigation.

New Mexico Natural Resources Department; April, 1981. Subject: Listing of issues and concerns developed through public meetings hosted by NMNRD. Listing provided by priority.

State of New Mexico American Indian Pueblo officials, 1982. Subject: Listing of elected officials for 1982.

USDI Geological Survey, Conservation Division. Subject: Potential hydroelectric power.

USDI Geological Survey, 1980. Subject: Assessment of mineral potential for leasable minerals.

New Mexico Department of Game & Fish; March, 1980. Subject: Update of wildlife data for the Gila endangered species habitat.

USDI BLM. Subject: Proposed Wilderness Study Areas contiguous to Hells Hole RARE II unit.

U.S. Fish & Wildlife Service, Ecological Services. Subject: Second informal review.

New Mexico Department of Game & Fish; February, 1980. Subject: Review of indicator species and Threatened & Endangered species with vegetative typing and key area typing. Individuals present: Ralph Little, John Hubbard, and Gerald Getes.

USDI Fish & Wildlife Service, Albuquerque Office; Dec., 1980. Subject: Review of Threatened & Endangered species and vegetative typing. Comments and suggestions and obtained population estimates. Individuals present: Jack Woody, Jim Johnson, Gary Halverson, and Dave Langosky.

Annual meeting, Gila National Forest and New Mexico Department of Game & Fish, Southwest Area; July, 1982. Subject: Brief review of wildlife data compiled on Gila; presentation and handouts of planning status.

USDI Fish & Wildlife Service meeting with Roger Skeggs, Sept., 1982. Subject: Review of Threatened & Endangered species, update of status of Forest Plan.

FINAL ICOs

The final ICOs are also described in Chapter 1.

In the following text, the major public issues, management concerns, and opportunities on the Gila have been assessed and reformatted into a local situation statement. These locally identified issues and concerns have been listed under the National or Regional Concern that they refer to or amplify. As a result of comments received on the draft planning documents issue 1 and 2 were rewritten. A more detailed discussion of issues can be found in the Gila National Forest Technical Report on Issues Concerns and Opportunities (available at the Forest Supervisors Office)

1. Produce timber and wood fibers: Opportunities exist for sustaining or increasing the volume of timber available from the Forest. A portion of this volume could be sustained from steep slope areas that have not been logged in the past. The amount of volume supplied, the location of timber activities and the potential conflicts with other resources are all concerns.

The projected future need for fuelwood from public lands has increased in recent years. There is a limited supply of fuelwood to be allocated.

2. Manage and utilize range resources and improve range grazing: Currently, livestock use is in balance with capacity on a significant portion of the Forest, however, there are some areas where livestock use exceeds production capability. Opportunities are available to increase production capability and reduce conflicts with other resources.

3. Adjust land ownership as needed to support resource management goals: The issue on the Gila is the expansion of communities surrounded by National Forest lands. The location and amount of these lands creates conflict.

Road and trail rights-of-way acquisition for access is not adequate to support resource management goals.

4. Provide various recreation options: The projected future need for dispersed recreation opportunities on the Gila are increasing.

Vehicle use on Forest lands, trails, and primitive roads are viewed as a right by many people, while others object to this use. The type of management and degree of restriction creates public conflict.

5. Maintain or improve fish and wildlife habitats: Opportunities exist on the Gila to maintain or improve wildlife habitats. Habitat requirements for some wildlife species conflict with other species and other resources.

6. Construct, operate, and maintain transportation facilities: This issue is related to the economic efficiency of the Forest. The Forest concern is road maintenance and the possible disinvestment occurring as a result of insufficient road maintenance and the impact of this situation of other resources and uses.

7. Provide for various wilderness management options: As a result of New Mexico Wilderness legislation, two areas on the Gila (Hells Hole and Lower San Francisco) are allocated for wilderness study. The recommendation of these areas to either Wilderness or Non-wilderness is the issue.

8. Riparian Habitat: This type of habitat is very important to many species of wildlife and is also important to domestic livestock and public recreation use. Although these uses can sometimes co-exist, conflicts often occur.

All issues will be addressed using a combination of standards and guidelines and outputs. Issues not related to any of the outputs or costs will only be addressed through standards and guidelines. Because of changes in standards and guidelines and outputs, the degree of issue resolution will vary between alternatives.

B. Forest Planning Model

INTRODUCTION

Appendix B describes the analysis process used in developing the range of alternatives discussed in Chapter 2 of this Environmental Impact Statement.

The Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, as amended by the National Forest Management Act (NFMA) of 1976 mandates preparation of National Forest System Land and Resource Management Plans. These plans are to provide for multiple use and sustained yield of goods and services from the National Forest System in a way that is sensitive to economic efficiency and maximizes long-term net public benefits in an environmentally sound manner [36 CFR 219.1(a) and (b)]. Regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969 require that all reasonable alternatives, including the Proposed Action, be vigorously explored and objectively evaluated [40 CFR 1502.14].

In order to meet these requirements, the Forest developed a quantitative analysis incorporating economics into the process.

The purpose of this analysis is three-fold: First, it assures that each alternative contained the most cost efficient combination of management activities which met the objectives of that alternative. Second, it provided a means to evaluate or compare alternatives for the purpose of choosing among them. Third, it allowed a quantitative starting point from which nonmonetary values can be related and discussed.

Forest planning is a detailed analysis process. It is necessary to analyze the interrelationships between renewable and nonrenewable resources, economic trends, and the social aspects of distributing resources and services to society. The goal is to select the most economically efficient combination of management prescriptions that would achieve a given set of priced and nonpriced goals and objectives from the millions of possible combinations of management emphasis which could be applied throughout the Forest.

Computer modeling is an analytic technique designed to overcome the complexity of keeping track of the resulting resource outputs, environmental consequences, costs, benefits, and activity schedules applied to the land. This phase of the process is a tool for the manager to use in making a decision. However, based on professional judgment and experience, adjustments in resource distribution are appropriate in order to satisfy implicit social-political implications, or intangible resource considerations which are not inherent in a mathematical model. Judgmental decisions are described in Chapter 2 and the constraints section of this appendix.

Requirements to be fulfilled in the planning process are described in 36 CFR 219.12. A brief discussion of the steps used on the Gila National Forest to complete the planning actions is described below.

Identification of Purpose and Need

Public issues, management concerns, and resource use and development opportunities were identified through public participation activities and coordination with other Federal agencies, State and local governments and Indian tribes. The development of issues, concerns, and opportunities is described in detail in Appendix A.

Planning Criteria

Planning criteria guided the planning process through: 1) Identification of the kind and detail of resource inventories needed; 2) the development of benchmark runs for determining minimum and maximum levels of resource production (decision space) responsive to issues, concerns and opportunities; 3) the formulation and evaluation of alternatives responsive to resolving issues, concerns, and opportunities; 4) insuring net public benefits were maximized.

Inventory Data and Information Collection

Individual resource inventories were completed to identify site specific areas having common environmental characteristics. Data was collected and stored in the Forest resource data base consistent with the available information and the level of detail needed.

Analysis of the
Management Situation

The Analysis of the Management Situation (AMS) is a determination of the ability of the Forest to supply goods and services in response to society's demands. The primary purpose for this analysis is to provide a basis for formulating a broad range of reasonable alternatives. During development of the AMS, benchmark runs with single resource emphasis were developed to define the Forest capability to supply various renewable resources on the Forest. Benchmarks were also developed to determine the most cost effective means of managing the Forest.

Formulation of
Alternatives

Formulation of alternatives is described in Chapter 2 and in the Formulation of Alternatives portion of this appendix. The primary objective is to provide an adequate basis for identifying the alternative that comes nearest to maximizing net public benefits, consistent with resource integration and management requirements of (36 CFR 219.13 and 219.27).

Estimated Effects
and Evaluation of
Alternatives

The physical, biological, economic, and social effects of implementing each alternative, considered in detail, provide the analytic basis for comparison of alternatives. This is presented in detail in Chapter 4. To provide a clear basis for decision-making, Chapter 2 presents the major environmental impacts in comparative form in a manner which shows the major differences between the Proposed Action and the other alternatives. The Constraints section of this appendix shows the constraints used to formulate each alternative.

INVENTORY DATA

The following discussion presents concepts on how resource data were utilized to delineate capability areas, define areas tentatively suitable for management practices, and determine production coefficients. The interrelationship between alternative development and implementation is also discussed.

The first step in gathering resource data was to define areas that could be utilized as the basic inventory units. These were defined by combining slope, vegetation, and soils information and were called Capability Areas. All resource data were cataloged into these areas.

As described in the Analysis Area section of this appendix, analysis areas were defined to address issues and concerns and were not defined as aggregations of capability areas. Capability areas and the inventory data gathered by capability area were, however, used to determine the acreage within analysis areas that were suitable for specific management practices and to provide the basic data needed to develop production coefficients.

Acres suitable for various management practices within the analysis areas were determined by reviewing the biological capabilities of the capability areas within the analysis areas. These acreages provided the framework for developing integrated production coefficients that would meet a range of management objectives for each analysis area.

Production coefficients reflect the number of units per acre or per area of a given resource that can be produced over a specific period of time. These coefficients were estimated for the acreages within the analysis areas that would have a similar response to management. Resource specialists made these estimates using the latest research findings, simulation models, literature reviews, field observations, and professional experience. After the coefficients were generated for areas of similar response within the analysis areas, the ID team modified these coefficients as needed to form integrated allocation and scheduling alternatives (prescriptions) for the total analysis area.

Because analysis areas are spatially locatable and resource data were used to develop coefficients for these individual analysis areas, the outputs and costs generated for the proposed action alternative can be used to monitor progress in implementing the alternative and to develop subsequent programs for implementation.

The following list summarizes resource data sources used:

- Forest Timber Inventory Data
- Forest Timber Compartment Examination Data
- Forest Recreation Opportunity Spectrum Inventory
- Forest Visual Resource Inventory
- Wildlife Field Review Information
- Wildlife Inventory
- Soil Inventories
- Forest Transportation Inventory
- Forest Slope Map
- Forest Fuelwood Inventory
- Forest Fire Occurrence Information
- Forest Fuels Inventory
- Range Allotment Analysis Information
- Forest Vegetation Map
- Forest Precipitation Map
- Range Allotment Management Plans
- Range Improvement Inventory

OVERVIEW AND ANALYSIS PROCESS

Planning consists of exploring the productive potential of the Forest and analyzing alternative strategies for management. This analysis is conducted with a model that is a computerized representation of the Forest. All Forests were directed to construct a planning model with a standardized computer software package called FORPLAN. The Forest used the Direct Entry option of FORPLAN (FORPLAN Version 2, Release D1).

Analysis prior to the use of the FORPLAN model included that needed to develop analysis areas, define prescriptions, and develop coefficients for both costs and outputs. These processes are explained in detail in their respective sections of this appendix. Cost and output coefficient development involved the use of various analytical models. In defining the inputs to the models that were used in addition to FORPLAN, the ID team always tried to integrate resources in the most cost efficient way and simulate outputs using the most cost effective practices.

After analysis areas and prescriptions were defined and coefficients were developed FORPLAN was used to generate benchmarks and alternatives. FORPLAN is a linear programming model that simultaneously distributes specific land areas to individual management prescriptions, and schedules use and development activities to achieve a specific set of objectives within certain constraints. Variables that are accounted for by the model include resource outputs, costs, and period of implementation. Given a set of data describing the Forest, an objective function and a set of constraints, the FORPLAN model determines an optimal or best possible solution to the problem. The objective function on all alternatives was to maximize present net value. Present net value is the total of discounted benefits minus discounted costs.

The primary use and purpose of the model is to look at the Forest's productive potential and describe what is and is not possible. Decisions about how to structure the model and the analysis are human choices. Decisions are not made by the model. The model is simply a device used to organize the elements of a decision problem and describe the results.

In some cases, the FORPLAN model indicated the Forest could not be managed to meet a specific combination of objectives. The limitations of land and resources, the impact on environmental quality, or the practical limits of budgets occasionally resulted in an infeasible solution. The ID Team then modified the objectives and made other "runs" of the computer model to find the particular combination of lands, activities, and schedules which would best meet the goals of that alternative. FORPLAN solutions were validated by the ID Team to insure that solutions represented implementable options. Because FORPLAN is only an aid for analysis that does not model all components of net public benefits, adjustments in final solutions were made by the ID Team based on professional expertise and prior experience. While the alternatives may not exactly match final FORPLAN solutions, relative differences between alternatives have not been affected.

After the FORPLAN model was used to generate alternatives, the IMPLAN model was utilized to analyze economic impacts associated with the various alternatives. This analysis is explained in the section of this appendix that addresses Social and Economic Analysis.

ANALYSIS AREAS

Analysis areas are the land units used by the Forest to assign acreage to specific uses and track the outputs and costs through time.

In order to address issues, evaluate significant economic variables, determine the effects of resource interactions, and provide for an allocation that is implementable by Forest personnel, analysis areas were delineated by a two level hierarchy. Data reliability and limitations of the FORPLAN model did not effect the delineation.

The first level in this hierarchy was defined as being combinations of grazing allotments that had similar management intensity potentials. These are referred to as contiguous analysis areas. This level was defined to address the range issue and the potential competition between wildlife and domestic livestock for forage. It also allowed for the analysis of relative economic efficiency between domestic livestock production units. By making this the highest analysis level, the effects of opening up forest canopy through timber management could also be evaluated.

Model analysis areas were defined within this first hierarchical level [contiguous analysis area] with a second level identifier that indicated if the actual model analysis area was a logical timber management area, an area of accessible fuelwood, an area of potentially accessible fuelwood, an area of wilderness or the remainder of the first hierarchical level acres.

Logical Timber Management Areas [LTMA's] were defined as nonhomogeneous areas of suitable timber that could logically be managed for the production of timber. They were defined spatially so that economic differences in timber production costs, road costs, and timber haul costs could be evaluated. Consideration for other resources were integrated into the prescriptions for these areas and the effects of the overall management of these areas on forage production was evaluated in relation to the management of the grazing resource for a total contiguous analysis area. Because of these spatially locatable areas, transportation costs and haul costs could be estimated with a high degree of reliability. These costs are major factors in determining the economic efficiency of timber harvest on the forest. This structure also provided for output controls by area and time frames.

Accessible and potentially accessible fuelwood areas were defined as homogeneous noncontiguous areas within the contiguous analysis areas. These areas were defined as separate analysis areas so that the differences in cost between providing fuelwood from accessible woodlands areas could be compared to providing fuelwood from potentially accessible woodlands areas and so that the forest issue on fuelwood could be addressed. Areas were delineated within contiguous analysis areas so that the overall management of these areas could be coordinated in relation to the management of the contiguous analysis area.

Wilderness analysis areas were also defined within contiguous analysis areas. These areas were defined so that the management for grazing and wildlife could be coordinated in relation to the management of the contiguous analysis area. To insure consistent management of the recreation resource, wilderness recreation allocations were coordinated by Ranger District.

The remainder of the acres within a contiguous analysis area was put into a model analysis area called "other". These areas were defined so that domestic livestock production on the remainder of the contiguous analysis area could be evaluated and so that the wildlife associated with unsuitable coniferous forests and grasslands could be integrated into management of the whole contiguous analysis area.

Most potential tradeoffs associated with defining spatially locatable analysis areas were overcome by using computer tools that developed cost and output coefficients for areas of similar response. Spatially locatable timber analysis

areas resulted in restricted timing choices, but they provided for the analysis of logical choices. The Forest Management Team concurred that the tradeoffs associated with fewer model choices were offset by more reliable economic information and implementable solutions that could be tracked to specific locations.

Analysis areas are described below. The description of the contiguous analysis areas describe the total area. As a result, no description is included for the model analysis areas. The model analysis areas are displayed to indicate the acreage of those that exist within the contiguous analysis areas.

AA#	ACRES	DESCRIPTION
2A	18,027	This 18,027 acre contiguous analysis area is on the Black Range Ranger District. It is approximately 12 miles west of Beaverhead and is bounded on the southwest by the Middle Fork of the Gila River. The northern boundary is the Black Range-Reserve District boundary, while Forest Road 142 is the approximate boundary on the east. Elevations range from approximately 7,760 feet to 8,180 feet. Vegetation includes approximately 8,286 acres of Ponderosa pine, 7,007 acres of woodland, 64 acres of riparian, 523 acres of plains grassland and 2,147 acres of mountain grassland. This area includes no acres of tentatively suitable timber. The area is made up of two grazing allotments; Canyon Creek and Indian Creek.
2A51	1,777	Potentially accessible fuelwood portion of contiguous analysis area
2A52	14,327	Gila Wilderness Portion of contiguous analysis area
2A53	1,923	"Other" portion of contiguous analysis area
2B	165,613	This 165,613 acre contiguous analysis area is on the Black Range Ranger District. It includes an area north of Black Mountain to the forest boundary above State Road 78 north of Indian Peaks and two miles west of Indian Peaks. It is approximately bounded on the south by State Highway 59 and in the vicinity of the Gila Wilderness boundary. Elevations range from 9,287 feet on the top of Black Mountain to approximately 6,500 feet. Vegetation includes approximately 1,433 acres of mixed conifer, 90,410 acres of Ponderosa pine, 121 acres of riparian, 42,053 acres of woodland, 16,319 acres of plains grassland, and 15,277 acres of mountain grassland. The area is made up of three grazing allotments; Black Mountain, Corduroy, and V cross T.
2B50	11,255	Accessible fuelwood
2B51	4,933	Potentially accessible fuelwood
2B52	5,125	Gila Wilderness
2B53	132,068	"Other" portion of contiguous analysis area
2B01	2,190	Indian Creek West LTMA
2B02	3,157	Houghton Canyon LTMA
2B03	1,264	Indian Creek East LTMA
2B04	2,110	Cooney Prairie South LTMA
2B05	1,288	West of Beaverhead Airstrip LTMA
2B10	820	Hardcastle Canyon LTMA
2B11	1,403	Cooney Prairie North LTMA
2C	45,762	This 45,762 acre contiguous analysis area is on the Black Range Ranger District. It includes an area bounded on the west by the Continental Divide, on the north and east by the Forest boundary, in the vicinity of State Highway 59 on the south. Elevations range from approximately 8,570 feet to about 6,880 feet. Vegetation includes approximately 14,071 acres of Ponderosa pine, 217 acres of riparian, 29,830 acres of woodland, and 1,644 acres of mountain grassland. This area has no tentatively suitable timber areas. The area is made up of three grazing allotments; North Wahoo, South Wahoo, and Silver Creek.
2C50	356	Accessible fuelwood
2C51	4,904	Potentially accessible fuelwood
2C53	40,502	"Other" portion of contiguous analysis area

AA#	ACRES	DESCRIPTION
2D	45,348	This 45,348 acre contiguous analysis area is on the Black Range Ranger District. It includes an area bounded on the north in the approximate area of State Highway 59, on the east by the Forest boundary, and on the south by Little Mineral Creek. The western boundary is in the approximate vicinity of the Continental Divide. Elevations range from about 8,900 feet to approximately 6,900 feet. Vegetation includes approximately 2,395 acres of mixed conifer, 12,014 acres of Ponderosa pine, 152 acres of riparian, 30,337 acres of woodland, 50 acres of plains grassland, and 400 acres of mountain grassland. This area includes no tentatively suitable timber areas. The area is made up of two grazing allotments; Black Range and Poverty Creek.
2D50	2,370	Accessible fuelwood
2D51	3,742	Potentially accessible fuelwood
2D53	39,236	"other" portion of contiguous analysis area
2E	58,635	This 58,636 acre contiguous analysis area is on the Black Range Ranger District. It includes an area bounded on the north in a line even with Little Mineral Creek, on the east by the Forest boundary, on the west two miles west of Diamond Creek, and on the south just below Byers Run. Elevations range from approximately 8,870 feet to approximately 6,000 feet. Vegetation includes approximately 17,427 acres of mixed conifer, 20,572 acres of Ponderosa pine, 537 acres of riparian and 20,099 acres of woodland. This area includes 4,148 acres of tentatively suitable timber in two Logical Timber Management Areas. The area is made up of two grazing allotments; Turkey Run and South Fork.
2E50	104	Accessible fuelwood
2E51	627	Potentially accessible fuelwood
2E52	17,011	Aldo Leopold Wilderness
2E06	2,896	Lookout Mountain LTMA
2E12	1,252	North of Lookout Mountain LTMA
2E53	36,745	"other" portion of contiguous analysis area
2F	127,668	This 127,668 acre contiguous analysis area is on the Black Range Ranger District. It includes the area bounded approximately on the north by Byers Run, the Continental Divide on the west, by the Forest boundary on the east, and by Hillsboro Peak and Sawpit on the south. Elevations range from approximately 10,000 feet to approximately 6,000 feet. Vegetation includes approximately 24,246 acres mixed conifer; 18,754 acres of Ponderosa pine; 474 acres of riparian; and 84,194 acres of pinyon, juniper, and grassland. This Management Area has no tentatively suitable timber. The area is made up of three grazing allotments; North Palomas, Hermosa, and Cave Creek.
2F51	1,938	Potentially accessible fuelwood
2F52	82,670	Aldo Leopold Wilderness
2F53	43,060	"other" portions of contiguous analysis area
2G	59,409	This 59,409 acre contiguous analysis area is on the Black Range Ranger District. The area is bounded on the north by a line across Hillsboro Peak, on the east and south by the Forest boundary, and on the east by Grant and Sierra County line. Elevations range from approximately 10,000 feet to approximately 5,700 feet. Vegetation includes approximately 4,936 acres of mixed conifer, 6,921 acres of Ponderosa pine, 172 acres of riparian, and 47,380 acres of woodland. This area has no tentatively suitable timber areas. The area is made up of four grazing allotments; Kingston, Berenda, Macky, and Wedgewood.
2G50	79	Accessible fuelwood
2G52	1,837	Aldo Leopold Wilderness
2G53	57,493	"other" portion of contiguous analysis area

AA#	ACRES	DESCRIPTION
2H	32,404	This 32,404 acre contiguous analysis area is on the Black Range Ranger District. The area is bounded on the west by the Black Range-Mimbres Ranger District boundary, on the north in the vicinity of State Highway 59 to Sawmill Canyon up to Catron-Sierra County line. It is bounded on the east from a point where the Continental Divide intersects the Catron-Sierra County line in a nearly straight line south to Lookout Mountain. The southern boundary is two miles south of, and parallel to, the second standard parallel south, with a jog up to Stiver Springs. Elevations range from approximately 8,500 feet to approximately 7,500 feet. Vegetation includes approximately 577 acres of mixed conifer, 27,015 acres of Ponderosa pine, 175 acres of riparian, 3,823 acres of woodland, 693 acres of plains grassland, and 121 acres of mountain grassland. This area includes 7,122 acres of tentatively suitable timber in three Logical Timber Management areas. The area is made up of two grazing allotments; Alexander and Burnt Cabin.
2H50	962	Accessible fuelwood
2H51	779	Potentially accessible fuelwood
2H07	2,290	Alexander Peak LTMA
2H08	2,265	Scales Canyon LTMA
2H09	2,570	Boiler Peak LTMA
2H53	23,538	"other" portion of contiguous analysis area
3A	59,228	This 59,228 acre contiguous analysis area is on the Luna Ranger District. Area 3A is bounded on the west by the Arizona-New Mexico State Line, and in the vicinity of Highway 180 on the east. The northern boundary is adjacent to Nolan Creek and the southern boundary runs from Whiterocks southeast to Deep Creek. Elevations range from approximately 8,900 feet on the top of Aspen mountain to approximately 5,300 feet. Vegetation includes approximately 5,370 acres of mixed conifer; 29,264 acres of Ponderosa pine; 325 acres of riparian; and 33,269 acres of pinyon, juniper, and grassland. This area includes 9,958 acres of tentatively suitable timber. The Management Area is made up of one grazing allotment, Pueblo Creek.
3A50	690	Accessible fuelwood
3A51	331	Potentially accessible fuelwood
3A52	27,560	Blue Range Wilderness
3A01	1,406	Saddle Mountain LTMA
3A02	2,954	Sheep Basin LTMA
3A03	5,598	Johnson Canyon LTMA
3A53	20,689	"other" portion of contiguous analysis area
3B	57,935	This 57,935 acre contiguous analysis area is on the Luna Ranger District. It includes the area west and south of Luna, New Mexico. The west boundary is the Arizona-New Mexico state line, the south boundary is located in the area near Nolan Creek, and the east boundary continues along the San Francisco divide to the San Francisco River east of Luna. Elevations range from approximately 9,400 feet on Turner Peak to approximately 7,000 feet. Vegetation includes approximately 6,883 acres of mixed conifer; 41,640 acres of Ponderosa pine; 573 acres of riparian; and 8,839 acres of pinyon, juniper, and grassland. This area includes 33,042 acres of tentatively suitable timber. The area is made up of two grazing allotments; Luna and Underwood.
3B50	573	Accessible fuelwood
3B51	496	Potentially accessible fuelwood
3B20	6,777	Hell Roaring Mesa LTMA
3B04	5,646	Horse Mesa LTMA
3B05	6,092	South of Luna LTMA
3B06	1,823	Potato Patch LTMA
3B17	8,107	Frisco River West of Luna LTMA
3B19	4,597	Romero Lake LTMA
3B53	23,824	"other" portion of contiguous analysis area

AA#	ACRES	DESCRIPTION
3C	57,565	This 57,565 acre contiguous analysis area is on the Luna Ranger District. The area includes the area north and east of Luna, New Mexico. The western boundary runs along the San Francisco Divide south to a point near Bull Basin. The southern boundary runs from Bull Basin to Prairie Point. The eastern boundary is in the vicinity of the Apache-Gila National Forest boundary. The northern boundary runs from Freeman Mountain west to Underwood Lake. Elevations range from approximately 6,600 feet to 8,870 feet on top of Bishop Peak. Vegetation includes approximately 736 acres of mixed conifer; 36,637 acres of Ponderosa pine; 224 acres of riparian; and 19,968 acres of pinyon, juniper, and grassland. This area includes 13,128 acres of tentatively suitable timber. Tentatively suitable timber is confined to the Frisco divide. The remainder of the area is broken, unsuitable, pinyon or grassland. The Frisco River flows through this area. The area is made up of four grazing allotments; Centerfire, Dillman Creek, Laney, and Trout Creek.
3C50	3,094	Accessible fuelwood
3C51	2,062	Potentially accessible fuelwood
3C07	847	Deep Canyon North of Heifer Basin LTMA
3C08	210	Head Waters of Starkweather Canyon LTMA
3C09	4,777	Strawberry Canyon LTMA
3C10	2,664	South of Frisco Hot Spring LTMA
3C12	1,292	West of Dillon Mountain LTMA
3C14	389	Centerfire Creek LTMA
3C15	1,521	North of Luna LTMA
3C18	1,428	Bill Lee Mesa LTMA
3C53	39,281	"other" portion of contiguous analysis area
3D	165,131	This 165,131 acre contiguous analysis area is on the Luna Ranger District. It is located approximately 10 miles north of Luna, and is bounded on the north by the Forest boundary, on the south by Centerfire Bog and dipping down to State Highway 12 to Apache Creek Junction, on the west by Lake Erin and the State line, and the east by the Luna-Quemado District Boundary. Elevations range from approximately 9,300 feet on the top of Jim Smith Peak to approximately 7,000 feet. Vegetation includes approximately 1,722 acres of mixed conifer; 75,484 acres of Ponderosa pine; 446 acres of riparian; and 87,479 acres of pinyon, juniper, and grassland. This area includes 36,177 acres of tentatively suitable timber. Erosion has created a system of gullies which bisect the area, and has resulted in a reduction of productivity. In addition, parks and grasslands have been invaded by woody plants. The area is made up of three grazing allotments; Mangitas, Spur Lake, and Torriette.
3D50	14,380	Accessible fuelwood
3D51	2,269	Potentially accessible fuelwood
3D22	4,586	Cannoves Creek LTMA
3D23	3,551	Jones Canyon LTMA
3D24	7,490	Mangitas Flat LTMA
3D25	2,103	Spur Lake-Hardcastle LTMA
3D11	4,129	Large Canyon-Torriette Lakes LTMA
3D13	5,778	Freeman Mountain LTMA
3D16	2,558	West of Spur Lake LTMA
3D21	5,982	Jenkins Creek LTMA
3D53	112,305	"other" portion of contiguous analysis area
4A	82,327	This contiguous analysis area is 82,327 acres in size. It is located east, northeast and south of the town of Glenwood, NM. It extends from the San Francisco River valley to Bearwallow Peak and includes the historic mining area of Mogollon and Claremont. The northern most point is the Mogollon Divide and southern most point is just south of Pleasanton. The major drainages are Deep Creek and Mineral Creek, which with their several tributaries, cut through the area in deep canyons. Elevations range from approximately 9,953 feet on the top of Bearwallow Mountain to approximately 4,800 feet at Glenwood. Vegetation includes approximately 21,781 acres of

AA#	ACRES	DESCRIPTION
		mixed conifer, 17,689 acres of Ponderosa pine, 659 acres of riparian, and 40,100 acres of pinyon, juniper, and 2,098 acres of grassland. This area includes 20,912 acres of tentatively suitable timber in six logical timber management areas. The area is made up of five grazing allotments; Deep Creek, Shelton Canyon, Copper Creek, Holt Gulch, and Mogollon.
4A50	387	Accessible fuelwood
4A51	3,611	Potentially accessible fuelwood
4A52	3,847	Gila Wilderness
4A02	3,828	West of Deep Creek Divide LTMA
4A03	6,389	Deep Creek LTMA
4A04	3,327	West of Bearwallow Lookout LTMA
4A05	487	Cooney Peak LTMA
4A06	4,893	Mineral Creek LTMA
4A08	1,979	Spring Mountain LTMA
4A53	53,569	"other" portion of contiguous analysis area
4B	208,521	This 208,521 acre contiguous analysis area is on the Glenwood Ranger District. Area 4B is bounded on the west by the Arizona-New Mexico state line. On the north the boundary begins at Whiterocks and runs southeast to Highway 180, north along 180 to Saliz Pass, southeast to Brushy, and east to Mogollon Divide. The eastern boundary runs nearly straight south from Round Mountain to Pleasanton and jogs east to Rock Spring, Windy Point, and south to the Forest boundary. The Forest boundary bounds the southern boundary with a jog up to the San Francisco River and west to the state line. Elevations range from approximately 9,800 feet on the top of West Baldy to approximately 3,900 feet on the San Francisco River. Vegetation includes approximately 6,860 acres of mixed conifer, 14,839 acres of Ponderosa pine, 2,025 acres of riparian, 143,205 acres of pinyon/juniper, 17,268 acres of desert shrub, and 24,324 acres of grassland. This area includes 2,994 acres of tentatively suitable timber in one Logical Timber Management area. The area is made up of 12 grazing allotments; Kelly, Whiterocks, Alma, Devils Park, Harve Gulch, Roberts Park, Citizen, Pleasanton, Cedar Breaks, Lightning Mesa, Dry Creek and Sacaton. Unique or special features include Frisco Hot Springs on the San Francisco River and key bighorn sheep habitat along the river. This area also contains the bulk of the juniper push acreage on the district.
4B50	14,016	Accessible fuelwood
4B51	5,471	Potentially accessible fuelwood
4B52	20,183	Gila Wilderness
4B01	2,994	Devils Canyon LTMA
4B53	165,857	"other" portion of contiguous analysis area
4C	95,459	This 95,459 acre contiguous analysis area is on the Glenwood Ranger District. It includes an area north and south of Mule Creek, from the San Francisco River all of the Forest Service land south. Elevations range from 7,620 feet on the top of Radar Brushy Mtn. to approximately 4,200 feet on the San Francisco River. The San Francisco River forms the northern boundary and part of the western boundary as it extends into Arizona to its junction with Coal Creek. The remainder of the western boundary follows the State Line. The Forest boundary forms the southern and eastern boundaries of this area. Vegetation includes approximately 3,066 acres of Ponderosa pine; 674 acres of riparian; and 91,719 acres of pinyon, juniper and grassland. This area includes 1,134 acres of tentatively suitable timber in two Logical Timber Management areas. The area is made up of nine grazing allotments; Hardan Cienega, Pine Cienega, Dripping Springs, Pot Holes, Blue Creek, Tennessee, Mule Creek, Winchester, and Apache Creek. The dominant features of this area are the San Francisco River and Radar Brushy Mountain. This area also contains the Hells Hole Wilderness Study Area which contains 34,675 acres.
4C50	3,563	Accessible fuelwood

AA#	ACRES	DESCRIPTION
4C51	5,043	Potentially accessible fuelwood
4C09	596	Pine Cienega Creek LTMA
4C10	454	Hells Hole Area LTMA
4C53	85,803	"other" portion of contiguous analysis area
4D	41,463	This 41,463 acre contiguous analysis area is on the Glenwood Ranger District. The western edge of this area is located approximately four miles east of Glenwood, New Mexico, and extends east to the "Crest Trail" in the Gila Wilderness. The northern boundary is Mineral Creek and the eastern boundary is the Crest Trail. The western boundary roughly approximates the Gila Wilderness boundary with a jog up to Rock Springs and Windy Point. Elevations range from 11,000 feet at the highest point on the Forest, Whitewater Baldy, to approximately 4,900 feet at Whitewater Picnic Ground. Vegetation includes approximately 29,306 acres of mixed conifer, 8,836 acres of Ponderosa pine, 515 acres of riparian and 2,807 acres of pinyon/juniper. This area has 4,165 acres of tentatively suitable timber. The management area has no grazing allotments.
4D52	34,221	Gila Wilderness
4D07	4,165	Silver Creek Divide LTMA
4D53	3,077	"other" portion of contiguous analysis area
5A	83,674	This 83,674 acre contiguous analysis area is on the Mimbres Ranger District. It is an area approximately five miles south of Beaverhead bounded on the west by the Wilderness-Mimbres District boundary, on the north and east by the Black Range-Mimbres District boundary, and on the south by the ridge between the East Fork of the Gila River and main Diamond Creek. Elevations range from approximately 9,287 feet on the top of Black Mountain to approximately 6,000 feet. Vegetation includes approximately 295 acres of mixed conifer, 30,313 acres of Ponderosa pine, 391 acres of riparian, 45,164 acres of woodland, 6,642 acres of plains grassland, and 885 acres of mountain grassland. This area includes 6,158 acres of tentatively suitable timber. The area is made up of two grazing allotments; Jourdan Mesa and Taylor Creek.
5A50	9,304	Accessible fuelwood
5A51	2,040	Potentially accessible fuelwood
5A52	44,290	Gila Wilderness
5A01	1,317	East of Wall Lake LTMA
5A02	4,841	West of Wall Lake LTMA
5A53	21,882	"other" portion of contiguous analysis area
5B	134,643	This 144,507 acre contiguous analysis area is on the Mimbres Ranger District. It is approximately five miles east of Gila Center and seven miles southeast of Beaverhead. It is bounded on the west by the East Fork of the Gila River, on the south by Apache Creek and the Continental Divide, on the east by the Continental Divide, and on the north adjacent to main Diamond Creek. Elevations range from approximately 10,077 feet on the top of Reeds Peak to approximately 6,000 feet on the East Fork of the Gila River. Vegetation includes approximately 19,797 acres of mixed conifer; 59,508 acres of Ponderosa pine; 1,078 acres of riparian; and 50,749 acres of pinyon, juniper, and grassland. This area includes 5,351 acres of tentatively suitable timber in one Logical Timber Management area. The area is made up of one grazing allotment; the Diamond Bar.
5B50	2,567	Accessible fuelwood
5B51	882	Potentially accessible fuelwood
5B52	121,511	Aldo Leopold and Gila Wilderness
5B03	5,351	Corridor LTMA
5B53	4,332	"other" portion of contiguous analysis area
5C	193,662	This 193,662 acre contiguous analysis area is on the Mimbres Ranger District. It includes an area approximately four miles north of Mimbres and 18 miles northeast of Silver City. The area is bounded on the West by

AA#	ACRES	DESCRIPTION
		Highway 15, Sapillo Creek, and south to the Forest boundary; on the north by Apache Creek, Black Canyon, and the Continental Divide; on the east by the Black Range Divide; and on the south by Hendricks Mountain and Rabb Park. Elevations range from approximately 10,077 feet on the top of Reeds Peak to approximately 5,200 feet. Vegetation includes approximately 13,965 acres of mixed conifer, 66,570 acres of Ponderosa pine, 896 acres of riparian, 109,747 acres of pinyon-juniper, 168 acres of desert shrub, and 2,296 acres plain grassland. This area includes 26,132 acres of tentatively suitable timber. The area is made up of nine grazing allotments; Sapillo, Mimbres, Powderhorn, East Canyon, Sheppard, Allie Canyon, Avalanche Peak, Fierro and Shingle Canyon.
5C50	16,606	Accessible fuelwood
5C51	5,769	Potentially accessible fuelwood
5C52	69,861	Aldo Leopold Wilderness
5C04	11,811	Mimbres River LTMA
5C05	14,321	McKnight Cabin LTMA
5C53	75,294	"other" portion of contiguous analysis area
5D	51,183	This 51,183 acre contiguous analysis area is on the Mimbres Ranger District. It is located approximately six miles east of San Lorenzo, NM. It is bordered on the west and south by the Forest boundary, on the east by the Black Range Divide, and on the north by Hendricks Mountain and Rabb Park. Elevations range from 9,166 on the Black Range Divide to approximately 8,000. Vegetation includes approximately 7,704 acres of mixed conifer; 6,900 acres of Ponderosa pine; 240 acres of riparian; 35,851 acres of pinyon, juniper, and grassland; and 488 acres of desert shrub. This area includes 8,562 acres of tentatively suitable timber in one Logical Timber Management Area. The area is made up of six grazing allotments; Noonday, Gallinas, Mud Springs, Cold Springs, Hot Springs, and Carrizo.
5D50	4,662	Accessible fuelwood
5D51	2,635	Potentially accessible fuelwood
5D06	8,562	Gallinas Canyon LTMA
5D53	35,324	"other" portion of contiguous analysis area
6A	108,804	This 108,804 acre contiguous analysis area is on the Reserve Ranger District. It includes an area from the San Augustin plains on the east to Toriette Lakes on the west. The north boundary is State Highway 12 and State Highway 32. Deep Creek and Long Canyon Mountains form the south boundary. The eastern boundary follows the Forest boundary. Elevations range from approximately 8,975 feet on the top of Patterson Peak to approximately 6,450 feet at Cruzville. Vegetation includes approximately 10,757 acres of mixed conifer, 36,138 acres of Ponderosa pine, 107 acres of riparian, 53,172 acres of woodland, 6,239 acres of plains grassland, and 2,391 acres of mountain grassland. This area includes 23,955 acres of tentatively suitable timber. The area is made up of five grazing allotments; Cross V, Alexander, Govina, Dark Canyon, and Long Canyon. The Tularosa Wetlands is located in the Southwest portion. It includes the Wagon Tongue Mountains and the north end of the Tularosa Divide.
6A50	9,064	Accessible fuelwood
6A51	13,376	Potentially accessible fuelwood
6A29	6,332	East of John Kerr Park LTMA
6A30	4,955	Dark Ditch Canyon-Wagon Tongue LTMA
6A31	5,182	Govina Canyon LTMA
6A32	4,906	Squirrel Springs Canyon LTMA
6A33	701	Cold Springs Canyon LTMA
6A40	1,879	Sand Canyon LTMA
6A53	62,409	"other" portion of contiguous analysis area

AA#	ACRES	DESCRIPTION
6B	249,267	This 249,267 acre contiguous analysis area is on the Reserve Ranger District. It includes the T Bar grassland and the headwaters of Negrito Creek and Y Canyon. It is bounded on the south by Snow Lake and the Gila Wilderness. The Forest boundary is the boundary on the east along Rainy Mesa Divide to Eagle Peak, and along Long Canyon on the north. Elevations range from approximately 9,953 feet on the top of Bearwallow Mountain to approximately 7,000 feet where Y Canyon enters the San Augustin Plains. Vegetation includes approximately 28,396 acres of mixed conifer, 119,980 acres of Ponderosa pine, 756 acres of riparian, 26,424 acres of pinyon juniper, and 73,711 acres of mountain grassland. This area includes 81,623 acres of tentatively suitable timber in 15 Logical Timber Management areas. The area is made up of six grazing allotments; Cox Canyon, Deadman, Y Canyon, O Bar O, T Bar, and Corner Mountain. The T Bar grassland is wholly within this area. The area includes the Snow Lake and Willow Creek recreation areas.
6B50	5,419	Accessible fuelwood
6B51	20,926	Potentially accessible fuelwood
6B52	15,097	Gila Wilderness
6B10	3,644	Willow Creek LTMA
6B11	6,440	Turkey Creek LTMA
6B12	6,750	Gilita Creek LTMA
6B13	1,375	Snow Lake LTMA
6B14	5,266	Seven H L Canyon LTMA
6B15	9,550	Northeast of Bearwallow LTMA
6B16	6,844	Negrito Mountain LTMA
6B17	7,143	Negrito Fire Base LTMA
6B18	5,199	Upper End of Seven H L Canyon LTMA
6B19	4,480	O Bar O Canyon LTMA
6B20	6,896	Turkey Creek-Deadman Springs LTMA
6B21	8,121	East Side Eagle Peak LTMA
6B23	4,190	Lost Lake-Tularosa Mountains LTMA
6B24	2,541	Salvation Peak LTMA
6B26	3,084	East Elk Mountain LTMA
6B53	126,202	"other" portion of contiguous analysis area
6C	131,647	This 131,647 acre contiguous analysis area is on the Reserve Ranger District. The western boundary runs from Prairie Point through Reserve along Negrito Creek and Sheep Basin Divide. The northern boundary is the Luna and Reserve District boundary, while the eastern boundary runs from Cruzville along Deer Canyon to Eagle Peak and down along Rainy Mesa Divide. Elevations range from approximately 9,786 feet on the top of Eagle Peak to approximately 5,740 feet on the San Francisco River within the townsite of Reserve. Vegetation includes approximately 10,415 acres of mixed conifer, 54,173 acres of Ponderosa pine, 834 acres of riparian 61,101 acres of pinyon-juniper, 70 acres of plains grass, and 5,054 acres of mountain grassland. This area includes 38,675 acres of tentatively suitable timber in nine Logical Timber Management areas. The area is made up of five grazing allotments; Black Bob, Deep Canyon, Eagle Peak, Negrito, and Yeguas.
6C50	18,025	Accessible fuelwood
6C51	16,211	Potentially accessible fuelwood
6C01	6,774	Deep Creek Divide LTMA
6C02	2,881	Bull Basin LTMA
6C03	5,930	Rainy Mesa LTMA
6C04	7,534	Sheep Basin LTMA
6C05	6,233	Eagle Peak LTMA
6C06	647	Yeguas Peak-Telephone Canyon LTMA
6C07	4,965	West Side of Eagle Peak LTMA
6C08	1,804	Wilson Canyon-Polk Mesa LTMA
6C09	2,807	Five Springs-Deep Canyon LTMA
6C53	57,736	"other" portion of contiguous analysis area

AA#	ACRES	DESCRIPTION
6D	83,819	This 83,819 acre contiguous analysis area is on the Reserve Ranger District. It includes the lower reaches of the San Francisco River in the Reserve District as well as the Saliz Divide and Leggett Canyon area. Elevations range from approximately 8,000 feet on the top of Apache peak to approximately 5,300 feet where San Francisco River leaves the District. Vegetation includes approximately 2,951 acres of mixed conifer, 25,407 acres of Ponderosa pine, 241 acres of riparian, 52,911 acres of pinyon-juniper, 250 acres of plains grassland, and 2,059 acres mountain grassland. This area includes 8,297 acres of tentatively suitable timber in four Logical Timber Management areas. The area is made up of five grazing allotments; S.U., Leggett, Lower Plaza, Frisco Plaza, and Martinez.
6D50	10,022	Accessible fuelwood
6D51	14,063	Potentially accessible fuelwood
6D35	1,697	Reserve and South LTMA
6D36	1,044	Scattered West & North of Reserve LTMA
6D37	2,169	North of Lazy Meadows LTMA
6D39	3,387	Maverick Peak & Leggett LTMA
6D53	51,437	"other" portion of contiguous analysis area
7A	99,666	This 99,666 acre contiguous analysis area is on the Silver City Ranger District. It includes an area that encompasses approximately the north half of the Burro Mountain division 15 miles southwest of Silver City, NM. Elevations range from approximately 7,100 feet at Bullard peak to approximately 4,500 feet where the Gila River leaves the management area. Vegetation includes approximately 15,765 acres of desert shrub, 78,796 acres of woodland, 2,012 acres of Ponderosa pine, and 1,448 acres of riparian. This area includes no acres of suitable timber. The area is made up of seven grazing allotments; Burro Mountain, Ferguson Mountain, Gila River, Mangus Valley, Bullard Peak, Silver Dale, and School House Mountain.
7A50	14,765	Accessible fuelwood
7A51	1,455	Potentially accessible fuelwood
7A53	83,446	"other" portion of contiguous analysis area
7B	61,734	This 61,734 acre contiguous analysis area is on the Silver City Ranger District. It includes the approximately south half of the Burro Mountains. Elevations range from approximately 8,035 feet on the top of Burro peak to approximately 4,000 feet. Vegetation includes approximately 1,488 acres of Ponderosa pine, 51,040 acres of woodland, and 8,874 acres of desert shrub. This area has no suitable timber acres. The area is made up of four grazing allotments: C Bar, Moo Doo, Walking X, and White Signal.
7B50	15,572	Accessible fuelwood
7B51	98	Potentially accessible fuelwood
7B53	46,064	"other" portion of contiguous analysis area
7C	14,667	This contiguous analysis area is on the Silver City Ranger District. It includes the old Fort Bayard Military Reservation, and a State Game Refuge which is utilized by the Rocky Mountain Forest and Range Experimental Station and the New Mexico Department of Fish and Game as a co-operative research area. It also includes the Cameron Creek and a portion of Twin Sisters Creek drainages. Elevations range from approximately 7,800 feet at the head of Cameron Creek drainage to approximately 6,000 feet at the Fort Bayard State Hospital. The area includes approximately 2,052 acres of Ponderosa pine, 79 acres of riparian, 9,230 acres of woodland, and 3,177 acres of plains grassland. There is no suitable timber in the area.
7D	8,309	This 8,309 acre contiguous analysis area is on the Silver City Ranger District. It encompasses an area from approximately five miles northwest of Silver City which includes the Little Walnut recreational area. It is bounded on the east and south by the Forest boundary, on the west by the Continental Divide, and on the north by an area north of the North Fork of

AA#	ACRES	DESCRIPTION
		Walnut Creek. Elevations range from approximately 7,100 feet on the Continental Divide to approximately 6,100 feet. Vegetation includes approximately 992 acres of Ponderosa pine and 4,879 acres of woodland. This area includes no suitable timber acres. The area is made up of the Silver City Watershed grazing allotment.
	7050 1,954	Accessible fuelwood
	7051 1,282	Potentially accessible fuelwood
	7053 5,073	"other" portion of contiguous analysis area
7E	86,327	This 86,327 acre Management Area is on the Silver City Ranger District. It is bounded on the west by the Forest boundary, on the south by the North Fork of Walnut Creek, and on the North by Sapillo Creek and an area just south of the Gila River. The eastern boundary runs from Maverick Mesa to Tadpole Ridge, through Signal Peak over to the Continental Divide. Elevations range from approximately 9,000 feet on the top of Signal Peak to approximately 6,000 feet. Vegetation includes approximately 1,400 acres of mixed conifer; 29,000 acres of Ponderosa pine; 800 acres of riparian and 56,000 acres of pinyon, juniper, and grassland. This area includes 10,697 acres of tentatively suitable timber. The Management Area is made up of five grazing allotments; Reading Mountain, Twin Sisters Cow Creek, Bear Creek, and Walnut Creek.
	7E50 3,980	Accessible fuelwood
	7E51 6,803	Potentially accessible fuelwood
	7E52 13,120	Gila Wilderness
	7E04 3,452	West of Signal Peak LTMA
	7E01 5,501	Sheep Corral LTMA
	7E03 1,744	East of Signal Peak LTMA
	7E53 51,727	"other" portion of contiguous analysis area
7F	103,720	This 103,720 acre contiguous analysis area is on the Silver City Ranger District. It is bounded on the north by the Wilderness-Silver City District boundary, on the east by the Mimbres-Silver City District boundary. The southern boundary runs from the Continental Divide across Signal Peak, up to Maverick Mesa along Sapillo Creek and out to an area south of the Gila River to Shelley Canyon. The Gila River is the prominent feature in this area. Elevations range from approximately 7,752 feet at Granny Mountain to approximately 4,600 feet at the Gila River. Vegetation includes approximately 1,257 acres of mixed conifer, 23,821 acres of Ponderosa pine, 4639 acres of riparian, 73,093 acres of woodland, and 910 acres of plains grassland. This area includes 10,812 acres of tentatively suitable timber. The area is made up of six grazing allotments; Rough Canyon, Mogollon Creek, Watson Mountain, Brock Canyon, Spar Canyon, and Red Stone.
	7F50 376	Accessible fuelwood
	7F51 3,281	Potentially accessible fuelwood
	7F52 50,488	Gila Wilderness
	7F02 10,812	Meadow Creek LTMA
	7F53 38,763	"other" portion of contiguous analysis area
7G	30,834	This 30,834 acre contiguous analysis area is on the Silver City Ranger District. It includes an area located approximately 12 miles north of Cliff with the western boundary skirting the Forest boundary along Sacaton Creek to Lone Pine Hill. The northern boundary is a straight line from Lone Pine Hill to the Wilderness-Silver City District boundary. The eastern boundary follows the district boundary to Skeleton Canyon. The southern boundary is the National Forest boundary. Mogollon Creek and the lower portion of its primary tributaries are located within this Management Area. Elevations range from approximately 8,000 feet at Haystack Mountain to approximately 5,000 feet. Vegetation includes approximately 1,467 acres of mixed conifer, 3,537 acres of Ponderosa pine, 561 acres of riparian, 24,760 acres of woodland, and 509 acres of plains grassland. There is no suitable timber in this management area. The area is made up of two grazing allotments; Rain Creek (74 Mtn.) and Davis Canyon.

AA#	ACRES	DESCRIPTION
7G52	27,601	Gila Wilderness
7G53	3,233	"other" portion of contiguous analysis area
8A	21,804	This 21,804 acre contiguous analysis area is on the Wilderness Ranger District. The area is about three miles wide and 11 miles long. The south is bounded by Copperas Mountain, and the north by White Rocks Mountain. The eastern boundary is in the approximate vicinity of the East Fork of the Gila River and the Gila Wilderness boundary. The western boundary is east of the Middle Fork of the Gila River and in the vicinity of Highway 15, over to an area near Brushy Mountain and down along the Gila River. The majority of the area is within the XSX Grazing Allotment. Elevations range from approximately 7,400 on Copperas Mountain to approximately 5,500 on the Gila River. Vegetation includes approximately 787 acres of mixed conifer, 3,622 acres of Ponderosa pine, 224 acres of riparian, 14,039 acres of woodland, and 3,132 acres of plains grasslands. This area includes no suitable timber. The area is made up of one grazing allotment; the (XSX). The area comprises the headwaters and tributaries to the Gila River.
8A52	19,820	Gila Wilderness
8A53	1,984	"other" portion of contiguous analysis area
8B	237,603	This 237,603 acre contiguous analysis area is on the Wilderness Ranger District. The area is bounded on the north and east by the XSX Range Allotment and the Middle Fork of the Gila River; on the south by the main Gila River; and on the west by Mogollon Baldy, Center Baldy, Lookout Mountain, and Shelley Peak. The majority of the area is within designated wilderness. Elevations range from approximately 10,770 on Mogollon Baldy to 4,770 on the main Gila River. Vegetation includes approximately 62,349 acres of woodlands, 116,460 acres of Ponderosa pine, 45,430 acres of mixed conifer, 4,337 acres of riparian and 9,027 acres of grassland. There are no grazing allotments within the Management Area. The area contains no tentatively suitable timber. The area includes the Gila Cliff Dwellings National Monument.
8B52	236,409	Gila Wilderness
8B53	1,194	"other" portion of contiguous analysis area
9A	63,426	This 63,426 acre Management Area is on the Quemado Ranger District. It contains an area on the northern portion of the District including Black Mountain, Brown Springs, Willow Springs, and Largo Mesa to Escondido Mountain. The western and northern boundaries follow the Forest boundary on the northern most portion of the Forest. Elevations range from approximately 9,500 feet at Fox Mountain to 6,800 feet. Vegetation includes approximately 3,893 acres of mixed conifer, 5,490 acres of Ponderosa pine, 750 acres of riparian, 44,727 acres of pinyon-juniper, and 8,566 acres of grassland. This area includes 3,480 acres of tentatively suitable timber. The area is made up of four grazing allotments; Demetrio, Agua Fria, Harris Canyon, and Escondido.
9A50	21,475	Accessible fuelwood
9A51	3,848	Potentially accessible fuelwood
9A16	3,480	Northeast Side Fox Mountain LTMA
9A17	925	North of Fox Mountain LTMA
9A53	33,698	"other" portion of contiguous analysis area
9B	124,307	This 124,307 acre contiguous analysis area is on the Quemado Ranger District. It encompasses the central portion of the District from Escondido Mountain, south to an area south of Highway 12. The area also includes an area from Castle Rock to the Forest boundary on the east, excluding the Mangas Mountain area. Elevations range from approximately 8,400 feet on the top of Slaughter Mesa to approximately 6000 feet. Vegetation includes approximately 522 acres of mixed conifer, 58,614 acres

AA#	ACRES	DESCRIPTION
		of Ponderosa pine, 597 acres of riparian, 53,840 acres of woodland, and 699 acres of mountain grassland. This area includes 12,331 acres of tentatively suitable timber. The area is made up of five grazing allotments; El Caso, San Antone, Gallo Canyon Del Buey, and Jaramillo. Quemado Lake is within this analysis area.
9B50	14,288	Accessible fuelwood
9B51	15,933	Potentially accessible fuelwood
9B04	5,348	South of Mangas Administrative Site LTMA
9B05	2,832	Mangas Mountain LTMA
9B06	4,879	South of Mangas Mountain LTMA
9B07	540	Along Continental Divide LTMA
9B08	4,544	El Caso Springs Canyon LTMA
9B09	3,267	Escondido Mountain LTMA
9B11	3,345	West of El Caso Mountain LTMA
9B14	3,133	North of Jewett Gap LTMA
9B53	66,198	"other" portion of contiguous analysis area
9C	31,324	This 31,324 acre contiguous analysis area is on the Quemado Ranger District. It includes an area along the eastern edge of the District. The area is a portion of the Forest north of Padilla Springs to the Forest boundary at Flat Ridge. Elevations range from approximately 9,800 feet on the top of Mangas Mountain to approximately 6,500 feet. Vegetation includes approximately 2,277 acres of mixed conifer; 16,037 acres of Ponderosa pine; and 13,010 acres of pinyon, juniper and grassland. This area includes 10,634 acres of tentatively suitable timber. The area is made up of three grazing allotments; Puerto Viejo, Alamocito, and Sanchez.
9C50	3,597	Accessible fuelwood
9C51	771	Potentially accessible fuelwood
9C01	5,573	Mangas Mountain Lookout LTMA
9C02	2,275	East of Mangas Administration Site LTMA
9C03	6,639	Alamocito Canyon LTMA
9C53	12,469	"other" portion of contiguous analysis area
9D	77,271	This 77,271 acre contiguous analysis area is on the Quemado Ranger District. It is located in the west-central portion of the District. The area is bounded on the north by Gallo Mountain, and on the south by Apache Canyon. On the west the area is bounded by Dry Lake and runs east to Slaughter Mesa. Elevations vary from approximately 8,400 feet on Slaughter Mesa to approximately 6,800 feet. Vegetation includes approximately 1,412 acres of mixed conifer, 31,956 acres of Ponderosa pine, 14,928 acres of plains grasslands, 73 acres mountain grasslands, 28,790 acres woodland, and 15,146 acres of tentatively suitable timber. The area is made up of four grazing allotments; East Sand Flat, Jewett Gap, Jewett Community, and Queenshead. The area contains numerous cultural sites primarily of the Pueblo Culture.
9D50	5,302	Accessible fuelwood
9D51	11,293	Potentially accessible fuelwood
9D10	7,882	Slaughter Mesa LTMA
9D12	852	West of Sand Flats LTMA
9D15	9,381	South of Fox Mountain LTMA
9D53	42,561	"other" portion of contiguous analysis area
9E	24,422	This 24,422 acre contiguous analysis area is on the Quemado Ranger District. It includes an area in the southwest portion of the District approximately two miles from of Apache Creek. Apache canyon bounds the area on the north and the Tularosa River bounds the area on the south. The area runs east from Piney Park to Tularosa Mountain. Elevations range from approximately 8,900 feet on the top of Apache Mountain to approximately 6,400 feet. Vegetation includes approximately 4,556 acres of Ponderosa

AA#	ACRES	DESCRIPTION
		pine, 231 acres of riparian, 19,495 acres of woodland, and 140 acres of plains grasslands. This area has no tentatively suitable timber. The area is made up of three grazing allotments; West Sand Flat, Apodaca, and Apache Creek. The area contains many cultural sites including a substantial site on top of Apache Mountain.
9E50	190	Accessible fuelwood
9E51	990	Potentially accessible fuelwood
9E13	1,280	Apache Mountain LTMA
9E53	21,952	"other" portion of contiguous analysis area

PRESCRIPTIONS

Prescriptions serve as the basis for choice of what can be done in a specific analysis area. A prescription is the set of assigned management treatments or practices and a schedule of application to achieve the desired quantity of goods, services, and environmental consequences. As a result, each prescription consists of resource production coefficients, costs, and a scheduling option. The management requirements defined in 36CFR 219.17 were integrated into prescriptions by modifying the production coefficients and costs by an amount needed to assure compliance with these requirements.

A wide range of prescriptions was developed to meet goals and objectives of benchmarks based on the planning criteria, public issues, and management concerns and opportunities developed early in the planning process. Prescriptions ranged from minimum to maximum production of the various goods and services.

Economic efficiency was considered by the ID Team as prescriptions were developed by utilizing the most recent technology, research findings, and cost effective methodologies to accomplish management practices and activities. Prescription development was coordinated by the ID Team members to integrate various practices and activities together in the most cost efficient combinations.

The FORPLAN model assigned the prescriptions to specific analysis areas while maximizing present net value based on the constraints used to meet the goals and objectives of the benchmarks or alternative. Thus, the most cost efficient prescriptions to meet the objectives were chosen for each benchmark and alternative.

Prescription development process

The first step in the process of developing prescriptions was to develop the current prescription and the maximum and minimum resource output prescriptions that were required by FSM 1900, R3 Interim Directive Number 6. This resulted in eight prescriptions: current, maximum range capacity, maximum wildlife, maximum water yield, maximum watershed condition, maximum recreation, maximum timber, and low intensity. With the exception of current, these prescriptions maximized one resource and kept all other resources at a low intensity level. Minimum management requirements were included in all of the prescriptions. The written standards and guidelines for these prescriptions can be found in the Planning Records at the Gila National Forest Supervisor's Office.

This set of eight prescriptions was incorporated into a FORPLAN model built on the forest and used to generate the test benchmark alternatives. Since these benchmarks were generated using only maximum, current, and low type prescriptions, they were later rerun with the complete prescription set. These benchmarks were used to help determine if the maximum and minimum prescriptions provided an adequate range of intensity levels for all resources.

To determine the need for additional resource emphasis levels, the ID team reviewed graphs showing ranges of outputs for selected benchmarks. The number of additional emphasis levels had to be kept to minimum so that model size would not become too large. The following discussion documents the results of this review.

Wildlife: After reviewing outputs from the test benchmarks and the written prescriptions for wildlife, the ID team determined that another emphasis level needed to be added for wildlife before the prescriptions that would be used to generate the final benchmarks and the alternatives would be developed. The benchmarks indicated that with only the maximum, current and low emphasis levels, wildlife outputs either went down slightly over time (low and current) or went up substantially. It was felt that a budget level high enough to implement maximum wildlife on very many analysis areas was not likely. Since the maximum wildlife emphasis was the only emphasis level that did not result in a reduction over time, the ID team felt that an intermediate emphasis level that resulted in an increase in wildlife should be added.

Developed Recreation: After reviewing test benchmark outputs and the written prescriptions for developed recreation the ID team discovered a deficiency in the range of emphasis levels similar to that explained in wildlife. The maximum developed recreation emphasis level was the only emphasis level that resulted in an increase in RVDs over time. The low and current emphasis levels did not include a high enough funding level to maintain existing facilities. As a result, RVDs were reduced. The ID team felt that an intermediate emphasis level that would include funding for the maintenance of existing facilities and funding for the construction of a campground at Quemado Lake should be added.

Dispersed and Wilderness Recreation: After reviewing test benchmark outputs and the written prescriptions for dispersed and wilderness recreation, the ID team felt that an intermediate emphasis level should be added. Because of the demand for dispersed and wilderness recreation, the nonwildlife portion of the RVDs increased under all of the emphasis levels, but under low and current the quality of the experience would decline. With the funding included in these two emphasis levels, facilities such as trails and dispersed sites would deteriorate over time.

Timber: After reviewing test benchmark outputs, the written prescriptions, and the timber growth and yield simulations, the ID team felt that a sufficient range of choice had been provided by the maximum, low, and current timber emphasis levels and by the timber growth and yield runs associated with emphasis levels for other resources. These emphasis levels along with their timing options provided for harvesting the overstory with from one to four removals, provided for regenerating the stand in varying decades, and provided for a range of rotation lengths. The low emphasis level provided for extensive management of existing roaded stands. By including an option that did not harvest timber, a range of intensities from no harvest to intensive management with one removal (final removal) of the overstory was provided.

Range: After reviewing test benchmark outputs and the written prescriptions, the ID team found that the range of outputs provided by the maximum, current, and low emphasis levels for domestic livestock production was not sufficient. Like wildlife, only the maximum level resulted in any increase. Because the funding in current and low was not sufficient to maintain existing improvements, the expected permitted numbers of AUMs declined. It was felt that an intermediate emphasis level that would maintain existing facilities and provide for improvements on better analysis areas should be added.

Water Yield: After evaluating the test benchmark runs, it was determined that the forest did not have a significant potential to increase water yield. The ID team and management team agreed that the cost of special management efforts to increase water yield did not result in benefits commensurate with the costs. As a result the decision was made not to include special water yield prescriptions in the FORPLAN model that would be used to generate final benchmarks and the alternatives. Water yield increase or decrease resulting from other management activities would be tracked in all prescriptions.

Watershed Condition: After evaluating the test benchmark runs, it was determined that because permitted domestic livestock numbers would be in line with capacity by the third decade under all range emphasis levels and that standard timber contract clauses protect watershed condition in timber sale areas, a special emphasis level for watershed condition was not necessary. Instead, watershed condition considerations would be included in all emphasis levels and prescriptions.

Summary of resource emphasis levels used to develop prescriptions:

WILDLIFE

Maximum emphasis level: Emphasis is placed on high levels of management for habitat quality and production on the Forest. Funding is included to accomplish intensive surveys, plans, coordination, and direct habitat improvement to accelerate levels of wildlife habitat maintenance and improvement for big game, small game, waterfowl, game fish, nongame, and T&E species.

Low emphasis level: Emphasis is placed on meeting minimum legal requirements for wildlife species diversity and distribution of habitats. [Maintaining minimum viable populations]. Funding is included to coordinate with other agencies and with projects only to the level needed to maintain minimum viable population habitats

Current emphasis level: Emphasis is placed on mitigation and coordination in small project areas in an attempt to maintain sufficient habitat in those areas to maintain existing populations of big game, small game, waterfowl, nongame, and T&E species. T&E species recovery is only emphasized for those species identified in recovery plans. Funding is included to provide for cursory coordination of projects and reaction to crisis situations. Little future habitat planning or direct habitat improvement is included.

Intermediate emphasis level: Emphasis is placed on maintaining existing habitat and providing for a long-term improvement in diversity and distributions of habitat somewhat above current. Emphasis on T&E species is slightly above current emphasis level. Funding is included to provide for primary field reviews and integrated habitat management planning for priority projects. Existing habitat improvements would be maintained. Some high priority habitat improvement work would be accomplished.

Upper-intermediate emphasis level: When prescriptions were developed with low range and intermediate wildlife, forage was available that was not utilized. To provide an emphasis level where this forage was utilized by wildlife the upper-intermediate emphasis level was developed.

In this emphasis level, emphasis was placed on wildlife utilizing the herbaceous forage and cover habitat available when range goes to a low emphasis level. Some additional (above intermediate) improvements would be developed so that a level of coniferous habitat could be provided that would complement the available herbaceous forage and cover habitats. Funding is included to provide for primary field reviews, and integrated habitat management planning for priority projects. Existing habitat improvements would be maintained. Some high priority habitat improvement work would be accomplished. Wildlife would maintain existing range improvements of benefit to wildlife and not utilized by range to maintain the permitted AUMs indicated for the analysis areas under a low range emphasis level.

DEVELOPED RECREATION

Maximum emphasis level: The overall intent of this emphasis level is to take advantage of the practical opportunities to expand developed recreation on the Forest to the maximum level. This emphasis level provides for the maintenance and reconstruction of existing facilities. In addition, funding is included to construct the recreation complex at Quemado Lake, improve the facilities in the Willow Creek-Gilita complex, add the finishing touches to Dipping Vat Campground, complete the picnic area at Whitewater Creek, and develop the Gila Corridor. Twenty four trailhead facilities would be developed.

Low emphasis level: Developed sites would not be maintained or reconstructed. As deterioration reaches a point where facilities are no longer usable, they would be abandoned. Only safety and resource protection would be emphasized.

Current emphasis level: Facilities would be maintained only to the level possible with existing funding. The result would be a reduction in capacity of existing facilities. The Wrights Cabin area, and the Cottonwood, Bursum, and Pine Flat Campground would be abandoned subject to deterioration over time.

Intermediate emphasis level: Emphasis would be on retention of existing facility capacity and on providing for a moderate level of new development. Adequate funding would be available to maintain, reconstruct, and rehabilitate existing facilities. In addition, funding would be available to construct the Quemado Lake complex and 24 trailhead facilities.

DISPERSED AND WILDERNESS RECREATION

Maximum emphasis level: Emphasis would be on reaching a standard service level for dispersed and wilderness recreation. Adequate funding would be available to maintain existing facilities. Priority trails inside and outside the wilderness would be constructed. A winter play area would be developed in the vicinity of the intersection of State Highway 15 and Signal Peak FR#154.

Low emphasis level: Emphasis would be on a "do it yourself" recreation concept. Wilderness trail improvements would deteriorate and wilderness management would be reduced. Dispersed recreation facilities would deteriorate and would eventually be abandoned.

Current emphasis level: Emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Intermediate emphasis level: Emphasis would be on maintaining all existing facilities. Existing facilities would not deteriorate under this emphasis level. Additional funding would be available for wilderness trail maintenance.

TIMBER

Maximum emphasis level: To develop what was called the maximum emphasis level growth and yield projections, high intensity silvicultural prescriptions were modeled. When the understory was not fully stocked, stands were regenerated early in the planning period. The overstory was removed in one or two harvests. All stands on the forest would be entered within the first 40 years. The emphasis was on getting all stands managed primarily for timber production into their optimum growing condition as soon as possible.

Low emphasis level: Emphasis would be on extensive management. All stands were assumed to be regenerated naturally. Existing understories were managed to maturity even if they were understocked. This emphasis level was applied only to roaded areas.

Current emphasis level: Emphasis would be on trying to simulate the yields and silvicultural prescriptions presently being applied. Overstories were removed in two or three harvests in most Ponderosa pine stands. Some mixed conifer stand overstories were removed in four removals. If understories were close to being fully stocked they were managed to maturity. Depending on the site index, regeneration was accomplished by planting or site preparation for natural regeneration.

Other emphasis levels: In addition to the growth and yield simulations developed to meet the objectives of the above emphasis levels, special simulations runs were made to project timber yields associated with the management of timber to meet other resource objectives (wildlife habitat, forage production for range, etc.). These were incorporated into the various prescriptions in order to meet nontimber management objectives in the suitable coniferous forest areas. The exact method of incorporation is explained in the Gila National Forest Outputs Technical Report.

RANGE

Maximum emphasis level: Emphasis would be on providing the maximum available forage for domestic livestock within the biological capacity of the Forest and considering the forage requirements of the associated wildlife emphasis level. Adequate funding would be available to fully develop all allotments. All existing range improvements will be reconstructed on schedule. Additional support people will be provided to assist in full utilization of the range resource.

Low emphasis level: Emphasis would be on reconstruction of priority range improvements only (using Range Betterment Funds). Range capacity will decline over time. In prescriptions where the associated wildlife emphasis is low or current, permitted cooperation may be increased to sustain AUMs. This could also happen in areas where maintaining higher AUMs would not conflict with wildlife objectives of allocated prescription. The number of range support personnel on the Forest would decline.

Current emphasis level: Emphasis would be on reconstructing, when needed, as many existing improvements as possible with the current funding level (including Range Betterment Funds). Management plans and nonuse agreements would be validated. Those committing funds for out years would be honored. However, as new management plans come on line, only reconstruction funds will be available on a priority basis. Improvements that fail due to the lack of maintenance or reconstruction funds will cause a decline in capacity over time. As capacity declines, adjustments must be made. In prescriptions where the associated wildlife emphasis does not require the use of the released forage capacity, increased permittee cooperation can sustain AUMs. Range support personnel would stay at the current level.

Intermediate emphasis level: Emphasis would be on reconstructing, when needed, the existing range improvements. This would be done with Range Betterment Funds and appropriated Forest funds. In addition, funds would be available to construct new improvements on allotments showing potential for increased capacity. If this emphasis level were implemented on the whole forest, the livestock capacity would increase by the fifth decade to a level above the present capacity but below the existing permitted numbers. Range support personnel would stay at the current level.

OTHER RESOURCES AND USES

Emphasis levels for all other resources, uses and activities were incorporated into prescriptions created by combining the emphasis levels shown above. They were included at a level needed to meet the overall objective of each prescription.

After the range of emphasis levels were defined for all resources, the ID team reviewed all possible combinations of emphasis levels (possible prescriptions) and developed a proposed set of model prescriptions. The chosen prescriptions were designed to provide a range of choices in management intensity and implementation options. The judgement of the ID team was used to pick the emphasis combinations (prescriptions) that most cost effectively met this objective. When a combination of range, timber, and wildlife emphasis levels was chosen as a model prescription, the overall objective of the prescription was defined and the level of all other resources, uses, and activities for the total prescription was developed.

The fact that dispersed recreation and wilderness recreation supply approximately met the projected future use level on all of the original benchmarks indicated that these recreation activities were not significantly affected by other resource activities. Developed recreation was site specific and was also not significantly affected by other activities. Because of this, a decision was made to develop recreation prescriptions separate from other resource prescriptions. The emphasis levels for wilderness, and dispersed and developed recreation, therefore, became the prescriptions.

The following discussion indicates all of the prescriptions chosen and documents why they were chosen.

Prescription	Description
W	<p>This prescription is a combination of the low range, current timber, and maximum wildlife emphasis levels. When combined with the maximum recreation prescriptions, it provides an allocation choice at the nonmarket emphasis end of the decision space. It is also the original benchmark prescription for maximum wildlife production.</p> <p>Prescription "W" provides for a high level of management for habitat quality and production on the Forest. Range emphasis is at the low level. The forage potential would be developed and utilized by wildlife, so little opportunity would exist for maintaining livestock AUMs above the low emphasis level through permittee cooperation. Suitable timber areas not managed under special wildlife silvicultural prescriptions would be managed under the current timber emphasis level. Acres managed under special wildlife silvicultural prescriptions produce timber only at a level compatible with the maintenance or creation of target habitat levels. Approximately 50 percent of the 0 to 40 percent slope suitable acres would be managed in this manner. Steep slope areas would not be logged. Accessible and potentially accessible fuelwood areas would be entered. Fuelwood harvests would be at a relatively high level but would be done to improve wildlife habitat. Since range permitted numbers would be equal to capacity by the end of the second decade, watershed condition will improve. Some livestock concentration will, however, result in less than the optimum watershed condition. An intermediate to maximum recreation prescription would be needed to implement this prescription if it were selected for a high percent of the Forest area.</p>
B	<p>This prescription is a combination of low range, current timber, and intermediate wildlife emphasis levels. It provides a lower than current budget allocation choice. It provides an allocation choice that increases wildlife above the current level while allowing the range budget to go down.</p> <p>Prescription "B" provides for the maintenance of existing wildlife improvements. It provides for long-term improvement in diversity and distributions of habitat somewhat above the current emphasis level. The forage potential would not be totally developed and utilized so some opportunity would exist for maintaining livestock AUMs above the low emphasis level through permittee cooperation. Suitable timber areas not managed under special wildlife silvicultural prescriptions would be managed under the current timber emphasis level. Approximately 15 percent of the suitable acres would be managed with special wildlife silvicultural prescriptions. Choices to log either 0 to 40 percent slopes or both 0 to 40 percent and steep slopes are available with this prescription. Accessible and potentially accessible fuelwood areas would be entered. Fuelwood harvests would be at a relatively high level but would be coordinated with wildlife so that the intermediate level of wildlife habitat could be achieved. Since range permitted numbers would be equal to capacity by the third decade, watershed condition will improve. Some livestock concentration will, however, result in less than the optimum watershed condition. A current to intermediate recreation prescription would be needed to implement this prescription if it were selected for a high percent of the Forest.</p>

Prescription	Description
C	<p>This prescription is a combination of low range, current timber, and low wildlife. It provides an allocation choice that reduces the range and wildlife budgets while emphasizing timber production.</p> <p>Prescription "C" provides an option that trades off wildlife and range outputs for timber outputs. Depending on the budget provided, timber outputs can be above current, below current, or at current. This prescription can therefore, also provide a below current budget choice. Forage production would be at a level below the biological potential so the opportunity would exist for maintaining livestock AUMs above the low emphasis level through permittee cooperation. Suitable timber would be managed using current silvicultural prescriptions. Special wildlife silvicultural prescriptions would be applied to the suitable timber areas only to the degree needed to maintain minimum viable population. Approximately seven percent of the suitable timber would be managed using these special silvicultural prescriptions. Allocation choices would be available to log 0 to 40 percent slopes only, or to log both 0 to 40 percent slope and steep slope areas. Only accessible fuelwood areas would be entered under this prescription. Fuelwood harvests would be at a level that would provide for maintenance of minimum viable wildlife population habitats. Since livestock permitted numbers would be equal to capacity by the third decade, watershed condition will improve. Some livestock concentration will, however, result in less than the optimum watershed condition. Any recreation prescription would be compatible with this prescription.</p>
O	<p>This prescription is a combination of low range, low timber, and low wildlife. This prescription, in combination with the low recreation prescription, is the lowest budget allocation choice available to the model. It is the original benchmark prescription for Low Intensity.</p> <p>Prescription "O" provides an allocation choice that represents the least management activity and costs required to meet legal requirements and still remain technically feasible. Low intensity level standards, activities, costs, and outputs are generally the minimum to be met or exceeded in all other prescriptions.</p>
T	<p>This prescription is a combination of the low range, maximum timber, and low wildlife emphasis levels. It provides an allocation choice that reduces the range and wildlife budgets while emphasizing timber production. This is the original benchmark maximum timber prescription.</p> <p>Prescription "T" provides an option that trades off wildlife and range outputs for timber outputs. This prescription is very similar to "C" except for the following. In this prescription the suitable timber would be managed using maximum emphasis silvicultural prescriptions. Allocation choices would provide for logging steep slopes and 0 to 40 percent slopes at the same time. Accessible and potentially accessible fuelwood areas would be entered.</p>
U	<p>This prescription is a combination of the current range, current timber, and current wildlife emphasis levels. This is the current direction management prescription and was one of the original benchmark prescriptions.</p>

Prescription	Description
	Prescription "U" provides an option that depicts the outputs and effects associated with continuing the current management direction into the future.
G	<p>This prescription is a combination of the intermediate range, maximum timber, and current wildlife emphasis levels. Since wildlife habitat is expected to decline slightly under the current emphasis level, this prescription provides a relatively high commodity emphasis for both range and timber.</p> <p>Prescription "G" provides for a slight decline in wildlife over time. The decline would be primarily in the coniferous forest habitats. Suitable timber areas not managed under special wildlife silvicultural prescriptions would be managed under the maximum timber emphasis level. Approximately ten percent of the suitable acres would be managed with special wildlife silvicultural prescriptions. Allocation choices provide for logging steep slope and 0 to 40 percent slopes together. Accessible and potentially accessible fuelwood areas would be entered. Fuelwood harvests would be at a level that would provide for maintenance of existing habitat levels. Since livestock permitted numbers would be equal to capacity by third decade, watershed condition will improve. Maintenance of existing improvements and development of some new improvements should help solve distribution problems so long-range watershed condition should be closer to optimum than for prescriptions with current and low range emphasis. Any recreation prescription would be compatible with this prescription.</p>
R	<p>This prescription is a combination of the maximum range, maximum timber on 0 to 40 percent slopes, and low wildlife emphasis levels. It maximizes forage production for domestic livestock, and is one of the original benchmark prescriptions.</p> <p>Prescription "R" provides an option that trades off wildlife outputs and some timber outputs for domestic livestock production. Timber is harvested on only 0 to 40 percent slopes and is harvested in a manner that will reduce canopy cover and, as a result, increase forage production. Wildlife is managed to maintain minimum viable population habitats. Accessible and potentially accessible fuelwood areas are entered and are harvested to provide high forage yields while sustaining fuelwood outputs. Since livestock permitted numbers would be equal to capacity by the third decade, watershed condition will improve. The maintenance of all existing range facilities and the construction of new facilities should provide for better distribution. As a result watershed condition should be closer to optimum than if the low or current emphasis levels were included. Any recreation prescription would be compatible with this prescription.</p>
I	<p>This prescription is a combination of the maximum range, current timber, and current wildlife emphasis levels. This is the same as prescription "U" on the suitable timber areas but provides an allocation choice on the other areas that maximizes domestic livestock to the degree possible while maintaining current wildlife herbaceous cover and forage habitats.</p> <p>Since prescription "I" is the same as prescription "U" on the suitable timber areas, it was only applied on the unsuitable timber areas. On these areas it provides an option where wildlife habitats are maintained and domestic livestock numbers are increased to the biological forage potential. This potential is reached by maintaining existing improvements and building all</p>

Prescription	Description
	needed new improvements. Domestic livestock potential would be approximately five percent lower in this prescription than in Prescription "R". Accessible and potentially accessible fuelwood areas are entered. Harvest would be done to increase available forage while sustaining fuelwood outputs. Watershed condition would respond similarly to its response in prescription "R". Any recreation prescription would be compatible with this prescription.
J	<p>This prescription is a combination of maximum range, maximum timber, and low wildlife. This is the maximum commodity emphasis prescription. It is the same as prescription "R" on the non-suitable timber areas.</p> <p>Since this prescription is the same as Prescription "R" on the nonsuitable timber areas (maximum range with low wildlife), it was only applied to the suitable timber areas. On the suitable timber areas forage production was based on the reduction in canopy cover that resulted from applying maximum timber silvicultural prescriptions rather than special silviculture treatments used in prescription "R". Range was therefore, maximized to the extent possible when integrated with normal maximum timber intensity silvicultural prescriptions. Special wildlife silvicultural prescriptions were included to maintain minimum viable population habitat levels. Watershed condition would respond similarly to its response in prescription "R". Any recreation prescription would be compatible with this prescription.</p>
K	<p>This prescription is a combination of the intermediate range, maximum timber, and intermediate wildlife emphasis levels. This prescription is an intermediate prescription and puts emphasis on all resources. As a result, it would be a high budget prescription.</p> <p>Prescription "K" provides for the maintenance of existing wildlife improvements and development of some new high priority improvements. A long term improvement in diversity and distribution should result from its implementation. Domestic livestock management would also result in the maintenance of existing improvements and development of priority improvements. The combination of these levels for wildlife and domestic livestock would result in all of the potential forage on the forest being utilized. Suitable timber areas not managed under special wildlife silvicultural prescriptions would be managed under the maximum timber emphasis level. Approximately 15 percent of the suitable acres would be managed with wildlife silvicultural prescriptions. Choices to log either 0 to 40 percent slopes or both 0 to 40 percent and steep slopes are available with this prescription. Accessible and potentially accessible fuelwood areas would be entered. Fuelwood harvests would be at a relatively high level but would be coordinated with wildlife so that the intermediate level of wildlife habitat could be achieved. Since range permitted numbers would be equal to capacity by the third decade, watershed condition will improve. A current to intermediate recreation prescription would be needed to implement this prescription if it were selected for a high percent of the Forest.</p>
L	This prescription is a combination of intermediate range, current timber, and intermediate wildlife. This is an intermediate emphasis prescription. All resources are emphasized.

Prescription	Description
	Since this prescription is the same as prescription "K" on the nonsuitable areas it was not applied to those areas. On the suitable timber areas it is very similar to prescription "B". The only difference is the addition of higher range costs to accommodate the intermediate emphasis level. Since the analysis of range efficiency was the primary reason to develop this prescription, only choices to log 0 to 40 percent slopes were developed.
11	<p>This prescription is a combination of the low range, current timber, and upper-intermediate wildlife emphasis levels.</p> <p>Prescription "M" was developed to analyze the possibility of wildlife utilizing forage that was not utilized in the prescription that combined low range with intermediate wildlife (B). Wildlife funds would be used to maintain range improvements that were not utilized for domestic livestock under the low emphasis. By doing so, all available forage would be utilized. This prescription is the same, on the suitable timber areas, as prescriptions with current timber and intermediate wildlife. As a result it was only applied to the nonsuitable timber areas. Accessible and potentially accessible fuelwood would be entered. Fuelwood harvests would be at a relatively high level but would be coordinated with wildlife so that the upper-intermediate level of wildlife habitat could be achieved. Since range permitted numbers would be equal to capacity by the third decade, watershed condition will improve. Even though range is being managed at a low emphasis level, many of the existing improvements will be maintained by either range or wildlife. As a result, distribution should be better than in other prescriptions where range goes to low and watershed condition should be closer to optimum. A current to intermediate recreation prescription would be needed to implement this prescription if it were selected for a high percent of the Forest.</p>

Minimum Management Requirements

The regulations for the National Forest Systems Land and Resource Management Planning (36 CFR 219) specifies: 1) the minimum legal management requirements to be met for accomplishing the goals and objectives of the National Forest System (36 CFR 219.27) and 2) the minimum requirements for integrating individual Forest resource planning into the Forest Plan (36 CFR 219.14 through 219.26). These are collectively called Minimum Management Requirements (MMRs)

The minimum legal requirements defined in (36 CFR 219.27) can be categorized as either resource protection requirements that must apply to all management prescriptions or to prescriptions which specify practices involving; 1) vegetative manipulation of tree cover for any purpose, 2) timber harvest and cultural treatment, or 3) even-aged silviculture.

The Forest complied with (36 CFR 219.27) primarily within the specific standards and guidelines associated with the individual resource management practices developed for prescription levels.

The low intensity prescription level contains the standards and guidelines for mitigation measures required to be present in all prescriptions. The low intensity level is the least management activity and cost to meet legal requirements. Therefore, low intensity level standards, activities, costs, and outputs are the minimum to be met or exceeded in all other prescription levels.

Standards and guidelines which comply with requirements involving vegetative manipulation of tree cover or silvicultural practices were developed primarily for prescription levels other than low intensity where these types of activities were emphasized.

The minimum resource integration requirements specified in [36 CFR 219.14 through 219.26] were achieved through the Forest's planning process and in prescription standards and guidelines. [A more complete discussion of MMR's can be found in the Gila National Forest Technical Report on MMR's. This technical report is available at the Forest Supervisor's Office in Silver City, N.M.]

COEFFICIENTS

A coefficient is a number that represents a unit value, cost, or amount for the purpose of quantifying that value, cost, or amount of an activity or output at a given point in time in the model. Production coefficients for prescriptions were developed by resource specialists assigned to the Interdisciplinary Team for timber, fuelwood, and products (pulpwood); permitted livestock use and grazing capacity; developed and dispersed recreation including wilderness; cover habitat, squirrel habitat, turkey roost habitat, old growth habitat, wildlife animal unit months of herbaceous forage and cover habitat, and associated wildlife recreation; water yield increase and soil loss from roads, range activities and timber activities. Cost coefficients were developed for activities supporting resource protection and utilization.

Assignment of a prescription to an analysis area results in outputs and costs calculated in the model from the coefficients for each time period within the planning horizon. Coefficients can be either per acre or per area, per year or per time period. Costs relative to managing the Forest and producing goods and services are called "activities".

The planning horizon extends 200 years. It is divided into eight time intervals. Each one of the first five time periods is a decade in length. The remaining three periods are each 50 years long.

Not all Forest outputs were included in the FORPLAN model. Some outputs, such as timber, are relatively easy to model. The Forest has control over the harvest of timber along with a legal responsibility to regulate production and the ability to influence the rate of growth of the product. Mineral production by contrast is not controlled by the Forest. The market determines when a mineral resource is utilized. Mineral outputs, therefore, are not included in the model but the cost of administering a basic minerals program is included. Outputs and environmental effects from the minerals program are included in the analysis process described in Chapters 2 and 4.

All coefficients entered into FORPLAN were generated and entered in one of three ways. They were developed with RMYLD and SALT, or RANGELAND MODEL and put into FORPLAN format with the RXGEN program, or they were developed manually and put into FORPLAN format with the RXGEN programs, or they were entered into the FORPLAN data set either by hand or with the SETUP program.

RMYLD [Carleton B. Edminster, Rocky Mountain Forest and Range Experiment Station Research Paper RM-119] is a computer model that simulates tree growth and harvest volume that can be expected from alternative management practices. The growth and yields are projected over time. This program was run to simulate outputs for various timber management options, including options designed to provide for wildlife habitats and visual quality. Timber outputs were gross outputs per year for individual timber strata.

After RMYLD runs were completed, SALT [Region 3 USDA Forest Service] was used to add together the timber outputs for all of the strata in each LTMA and all of the RMYLD runs that defined a prescription. Gross volumes were converted to net volumes and the program calculated the long term sustained yield coefficient, the ending inventory coefficient, growth and the fuelwood available from defect and precommercial size trees.

RANGELAND MODEL [Region 3 USDA Forest Service] was used to project domestic livestock capacity and permitted numbers over the planning horizon. It did this for different management practices depending on the objective of the prescriptions.

After the above models were run the RXGEN (Gila National Forest, USDA Forest Service) programs were used to put the outputs from RMYLD and RANGELAND MODEL into FORPLAN format. This program also used coefficients generated by hand to develop all of the other range and timber related outputs and costs.

The SETUP (Gila National Forest, USDA Forest Service) program was used to put the remainder of the coefficients into FORPLAN format and to combine all data for all prescriptions into the FORPLAN data set.

Outputs

The FORPLAN output codes, output names, and units of measurement included in the model are as follows:

TABLE 85. List of Outputs

Output Code	Output Name	Units Of Measurement
02.	Net Merchantable Timber Volume	Thousand Cubic Feet/Area/Period
03.	Net Merchantable Inventory	Thousand Cubic Feet/Area/Period
30.	Ending Inventory	Thousand Cubic Feet/Area/Period
GROW	Growth	Thousand Cubic Feet/Area/Period
04.	Long Term Sustained Yield Capacity	Thousand Cubic Feet/Area/Period
VOMC	Net Sawtimber Mixed Conifer	Thousand Board Feet/Area/Period
VOPP	Net Sawtimber Ponderosa Pine	Thousand Board Feet/Area/Period
VDCA	Net Sawtimber Cable Logged	Thousand Board Feet/Area/Period
06.	Net Products	Thousand Board Feet/Area/Period
07PS	Fuelwood Sold P. Pine & Mixed Conifer	Thousand Board Feet/Area/Period
07WS	Fuelwood Sold Pinyon and Juniper	Thousand Board Feet/Acre/Period
09.	Dispersed Recreation	Thousand Recreation Visitor Days/Area/Period
11.	Wilderness Recreation	Thousand Recreation Visitor Days/Area/Period
12.	Developed Recreation	Thousand Recreation Visitor Days/Area/Period
13.	Grazing Capacity	Animal Unit Months/Acre/Year
14.	Grazing Permitted Use	Animal Unit Months/Acre/Year
90.	Old Growth Habitat	Acres/Area/Period
91.	Turkey Roost Habitat	Acres/Area/Period
92.	Cover Habitat	Acres/Area/Period
93.	Aberts Squirrel Habitat	Acres/Area/Period
WAUM	Herbaceous Cover and Forage Habitat	Animal Unit Months/Acre/Year
CFSR	Coniferous Forest Wildlife Supply	Thousand Recreation Visitor Days/Area/Year
CFVR	Coniferous Forest Wildlife Demanded	Thousand Recreation Visitor Days/Area/Year
HHSR	Herbaceous Forage Wildlife Supply	Thousand Recreation Visitor Days/Area/Year
HHVR	Herbaceous Forage Wildlife Demanded	Thousand Recreation Visitor Days/Area/Year
SOIT	Soil Loss From Timber	Thousand Tons/Area/Year
SOIR	Soil Loss From Range	Thousand Tons/Acre/Year
SOTM	Soil Loss From Roads	Thousand Tons/Acre/Year
95.	Water Yield Increase	Acre Feet/Area/Year
STAC	Suitable Acres	Acres/Area/Period

Benefit values

Prices outputs given a benefit values in the FORPLAN model are of two types, market outputs and those that are assigned a benefit value.

Market outputs are those that have a known measurable value in the marketplace. These include Net Sawtimber Mixed Conifer, Net Sawtimber Ponderosa Pine, Net Products, Fuelwood Sold, Developed Recreation, Permitted Grazing, and Water Yield Increase.

Outputs that were assigned benefit values are those that have no well-defined market value. These include Dispersed Recreation, Wilderness Recreation, Wildlife Recreation, and Free Fuelwood.

Real price increases result when demand is expected to rise faster than supply. That situation is expected for all benefit values in Table 86 that show an increase in benefit values between time periods. Where no increase is shown, prices are expected to increase at the same rate as inflation (no real price increase). All benefit values are in fourth quarter 1980 Dollars. All priced benefits are based on the "willingness-to-pay price", whether or not that price is actually collected by the Forest. Any outputs tracked in FORPLAN and not assigned a benefit value in Table 87 were tracked to address issues or for analysis purposes. All priced outputs that were included in present net value calculations were tracked in the FORPLAN model and were assigned benefits at the point the benefit was expected to occur. A detailed description of the benefit values and how they are calculated are in the planning records, Region 3 Regional Office. A complete description of how outputs were developed and tracked over time is included in the Gila National Forest Technical Report on Outputs (available at the Forest Supervisor's Office).

TABLE 86. Benefit Values for Outputs

Output	Unit of Measure	DECADE				
		1	2	3	4	5
Net Sawtimber (Mixed Conifer)	\$/MBF	86.35	86.35	86.35	86.35	86.35
Net Sawtimber (Ponderosa Pine)	\$/MBF	104.81	104.81	104.81	104.81	104.81
Net Products	\$/MBF	17.20	17.20	17.20	17.20	17.20
Wilderness Rec.	\$/RVD	10.14	10.14	11.56	12.47	14.20
Developed Rec.	\$/RVD	3.80	3.80	3.80	3.80	3.80
All Wildlife Recreation	\$/RVD	21.60	21.60	24.60	26.60	26.60
Dispersed Rec.	\$/RVD	3.80	3.80	4.33	4.67	5.32
Grazing Permitted Use	\$/AUM	7.88	8.26	8.64	8.80	8.95
Water Yield Increase	\$/Ac.Ft.	6.34	6.34	6.34	6.34	6.34
All Fuelwood (Free and Sold)	\$/MBF	8.70	8.70	8.70	8.70	8.70

Costs

Costs for management prescriptions were developed from the Forest's planned budget for 1983. They are represented in the FORPLAN model as fourth quarter 1980 dollars.

Where possible costs were tracked per some unit of output. This allowed the development of fewer unit costs and still provided a wide range of costs between prescriptions. When it was not possible to track a cost as a unit cost, the total cost of implementing a prescription was calculated and the cost item was entered in FORPLAN as dollars per area or dollars per acre. Costs that could not be applied to a specific land area were tracked as Forestwide costs.

Real price increases in costs were not incorporated. It was estimated that all costs would increase at the same rate as inflation. Any increase in costs through time was a result of an increase in management intensity.

Costs/activities tracked in FORPLAN are displayed in Table 87. Units of measure displayed in the table are the activity units by which costs are tracked. Unit costs multiplied by the actual activity units calculated in FORPLAN result in total costs for the activity. If the activity units were dollars, the costs were entered into FORPLAN as dollars and not tracked per unit of output. All costs were tracked in the FORPLAN model and were assigned at the point that they were expected to occur. A more detailed description of activities and how activities were tracked in FORPLAN can be found in the Gila National Forest Technical Report on Economic Efficiency (available at the Forest Supervisor's Office).

TABLE B7. List of FORPLAN Costs/Activities

FORPLAN		Activity		Activity Description
Activity Code	Activity	Unit		
FFF	Fighting Forest Fires	\$/area/year		Emergency fire fighting funds
DVRR	Developed Recreation Site Reconstruction	\$/area/year		Capital investments necessary to reconstruct existing facilities when they can no longer be maintained cost effectively.
DVRC	Developed Recreation Site Construction	\$/area/year		Capital investments necessary to construct new developed recreation facilities.
DPRC	Dispersed Recreation Site Construction and Reconstruction	\$/area/year		Capital investments necessary to reconstruct existing facilities when they can no longer be maintained cost effectively and to construct new facilities. Includes trail construction and reconstruction.
WLRC	Wilderness Recreation Site Construction and Reconstruction	\$/area/year		Capital investments necessary to reconstruct existing facilities when they can no longer be maintained cost effectively and to construct new facilities. Includes trail construction and reconstruction in wilderness.
DVOM	Developed Recreation Operation and Maintenance	\$/area/year		Includes expenditures for the management operation, and maintenance of developed recreation and visitor information recreation facilities. Includes planning and inventory, administration, operation, maintenance, visual resource management, resource treatment, and collection of recreation area use revenues.
WLDM	Wilderness Recreation Operation and Maintenance	\$/area/year		Includes expenditures for management, operation, and maintenance of the wilderness resource and related facilities including trails.
DROM	Dispersed Recreation Operation and Maintenance	\$/area/year		Includes expenditures for management, operation, and maintenance of dispersed recreation and visitor information recreation facilities. Includes planning, inventory administration, operation maintenance, and visual resources management.
080	Wildlife Operation and Maintenance	\$/acre/year		Includes expenditures for planning, management, administration, and maintenance of wildlife and fish habitat improvements.
100	Fish Habitat Improvements	\$/acre/year		Includes expenditures for structural and nonstructural improvements that benefit fisheries other than Threatened and Endangered species.

TABLE 87. List of FORPLAN Costs/Activities (Continued)

Activity Code	Activity	Unit	Activity Description
1415	Game and Nongame Habitat Improvements	\$/acre/year	Includes expenditures for structural and nonstructural improvements that benefit wildlife other than Threatened and Endangered species.
061*	Wildlife K V	acres logged/ area/period	Wildlife funds authorized under the Knutson-Vanderberg Act. Only tracked on Current Prescriptions. In all other prescriptions these funds are included in 100 and 1415 funds.
120	Threatened and Endangered Species Operation and maintenance	\$/acre/year	Includes expenditures for surveys, planning, and management of Threatened and Endangered animals, fish and plants.
140	Range Operation and Maintenance	\$/acre/year	Includes expenditures for managing the forage resource used by domestic livestock, including allotment management, range analysis, planning, and administration.
D05R	Range Improvement Replacement	\$/acre/year	Includes expenditures for the replacement of existing range improvements when it is no longer cost effective to maintain them.
D05	Range Structural Improvement Construction	\$/acre/year	Includes expenditures for construction of improvements for range management purposes, including fences, water development, and other range structures.
003	Range Non-structural Improvement	\$/acre/year	Includes expenditures for revegetation of lands to establish forage cover, including reestablishing forage cover by natural and artificial revegetation and the control of non-forage species.
02RC	Timber Road Preparation Construction	miles/area/period	Includes expenditures for road reconnaissance, road location, road surveys and road design, and field review for the construction of new roads.
02RR	Timber Road Preparation Reconstruction	miles/area/period	Includes expenditures for road reconnaissance, road location, road surveys and road design, and field review for reconstruction of existing roads.
160F	Nontimber Fuelwood	\$/acre/period	Includes expenditures for fuelwood administration and layout of sales in pinyon and juniper fuelwood types. Also includes the cost of building roads within potentially accessible fuelwood areas.

TABLE 87. List of FORPLAN Costs/Activities [Continued]

Activity Code	Activity	Unit	Activity Description
021P	Timber Sale Administration Products	MBF/area/period	Includes expenditures for the administration of the harvest of products during timber sales. Administration includes all aspects of supervising, administering, guiding, assisting, and controlling the harvest of contracted timber volumes by timber purchasers.
0210	Timber Sale Administration Other	MBF/area/period	Includes expenditures for the administration of the harvest of timber from 0-40 percent slopes. This cost was separated from the harvest of steep slope areas because of cost differences.
021C	Timber Sale Administration Cable	MBF/area/period	Includes expenditures for the administration of harvest of timber from slopes greater than 40 percent using cable logging techniques.
0200	Timber Sale Preparation Other	acres prepped/ area/period	Includes expenditures for preparation of timber to be sold from 0 to 40 percent slopes. Specific activities included in sale preparation are position statement development; sale area design; sale plan implementation; final package preparation, review, appraisal and offering; bid opening; and sale award.
020C	Timber Sale Preparation Cable	acres prepped/ area/period	Includes expenditures for Preparation of timber to be sold from greater than 40 percent slopes with cable logging techniques.
LOGO	Logging Cost User Other	\$/area/year	Includes user costs for haul, stump-to-truck, and logging administration. Since statistical high bid was used to arrive at the benefit value, the average of these costs is implicit in the benefit value. This activity, therefore, only includes the difference from the average for logging 0 to 40 percent slopes.
LOGC	Logging Cost User Cable	\$/area/year	Includes user costs for haul, stump-to-truck, and logging administration. This activity only includes the difference from the average costs in statistical high bid for the greater than 40 percent slopes that would be logged with cable logging techniques.
PCLC	Purchaser Credit Local Road Construction	miles/area/period	Includes costs for construction of local roads for timber access that is paid by the timber purchaser.
PCLR	Purchaser Credit Local Road Reconstruction	miles/area/period	Includes costs for reconstruction of local roads for timber access that is paid by the timber purchaser.

TABLE 87. List of FORPLAN Costs/Activities (Continued)

FORPLAN Activity Code	Activity	Unit	Activity Description
MTNT	Purchaser Maintenance	maintenance \$/area/period	Includes costs paid by the timber purchaser for surface rock, surface maintenance, and annual maintenance for the roads over which timber is hauled.
PCMS	Purchaser Credit Mid-Slope Local Roads	miles/area/period	Includes costs for construction of mid-slope local roads for timber access that is paid by the timber purchaser.
PDP	Purchaser Deposits Brush Disposal	MBF/area/period	Includes costs deposited by the purchaser for the disposal of activity created fuels.
RERC	Purchaser Credit Re-entry Road Cost	miles/area/period	Includes costs for reconstruction of local roads when timber areas are re-entered. This is the timber purchaser's portion. The engineering support for this is included in 02RR and 02RC.
046S	Soil Resource Planning, Operation Maintenance	\$/area/period	This Forestwide cost includes costs for soil surveys, soil operation and maintenance, and soil resource planning that is not associated with other resource projects.
034*	Water Resource Planning and Operation Maintenance	\$/area/period	This Forestwide cost includes costs for water resource planning and operation and maintenance that is not associated with other resource projects.
4533	Soil and Water Resource Improvement	\$/area/period	This Forestwide cost includes costs for direct soil and water improvement projects not associated with other resource projects.
6263	Soil and Water KV	acres logged/area/period	Includes expenditures for soil and water improvements associated with timber sale and authorized under the Knutson-Vandenberg act.
270	Energy Mineral Management	\$/area/year	Includes costs of administration of leases and permits associated with energy minerals.
280	Non-Energy Mineral Management	\$/area/year	Includes expenditures for nonenergy minerals, minerals materials, and administration of permits and leases. Also includes mining law compliance and administration.
350	Forest Fire Protection	\$/acre/period	Includes expenditures for fire prevention, detection, maintenance of fire equipment and initial attack forces, and supporting fire aviation operations for initial attack. Costs of forest dispatch system, hotshot crews pre and post-season, and training of forces to support initial attack were entered as Forestwide costs. All other costs were entered by analysis area.

TABLE 87. List of FORPLAN Costs/Activities (Continued)

FORPLAN			
Activity Code	Activity	Unit	Activity Description
360	Fuels Treatment Inventory and Maintenance	\$/area/year	Includes expenditures to dispose, reduce, manipulate, and/or modify forest fuels and for fire management.
380	Law Enforcement	\$/area/year	This Forestwide cost includes expenditures for the enforcement of laws governing the management of National Forest lands.
410	Land Management Planning	\$/area/year	This Forestwide cost includes expenditures necessary to amend, revise, and monitor plans mandated by the National Forest Management Act.
420	Land Ownership Management	\$/area/year	This Forestwide cost includes expenditures for processing, approval, and administration of permits. Includes leases, easements, amendments, rights of way, grants, and Federal Energy Regulator Commission license and permits. Also includes expenditures for land status maintenance, land ownership planning, and exchange proposals.
470	Existing Road Operation and Maintenance	\$/area/year	This Forestwide cost includes expenditures for system inventory, transportation system planning, and maintenance of roads included on the National Forest.
480	Road Construction and Reconstruction	\$/area/year	This Forestwide cost includes expenditures for construction and reconstruction of arterial and collector system roads.
500	Facilities Capital Investments	\$/area/year	This Forestwide cost includes expenditures for the construction of offices, dwellings, warehouses, and other related facilities.
520	Facilities Maintenance	\$/area/year	This Forestwide cost includes expenditures for the maintenance of structural improvements used for fire and general administrative purposes such as offices, dwellings, lookout towers, warehouses, fences, water systems, telephone systems, and other related facilities.
PUC	Permittee User Costs	\$/acre/year	Includes permittee expenditures for cooperation on the development of improvements.
ANRS	Natural Regeneration Steep Slopes	acres/area/period	Includes expenditures for treatments and activities for tree stand establishment on steep slopes with natural seed sources. Includes site preparation, animal control, field examinations, and other work to facilitate reforestation.

TABLE 87. List of FORPLAN Costs/Activities (Continued)

Activity Code	Activity	Unit	Activity Description
			Costs are split for steep slopes and other slopes so the increased costs of reforesting steep slopes could be accounted for.
ANRO	Natural Regeneration Other Slopes	acres/area/period	Includes expenditures for treatments and activities for tree stand establishment with natural regeneration on 0 to 40 percent slopes.
AARS	Artificial Regeneration Steep Slopes	acres/area/period	Includes expenditures for treatments and activities for tree stand establishment on steep slopes by planting. Includes site preparation, animal control, planting stock purchase, survival examinations, and other work to facilitate reforestation. Costs are split for steep slopes and other slopes so the increased costs of reforesting steep slopes could be accounted for.
AARO	Artificial Regeneration Other Slopes	acres/area/period	Includes expenditures for treatments and activities for tree stand establishment by planting on 0 to 40 percent slopes.
ATAS	Timber Stand Improvement High Site and Steep Slopes	acres/area/period	Includes expenditures for noncommercial intermediate cuttings and other treatments to improve the composition, condition, and growth of timber stands with high site index on steep slopes. Costs are split by site quality and slope so that cost differences could be accounted for.
ATBS	Timber Stand Improvement Lower Sites and Steep Slopes	acres/area/period	Includes expenditures for timber stand improvement activities on lower site index, steep slope areas.
ATAO	Timber Stand Improvement High Site and Other Slopes	acres/area/period	Includes expenditures for timber stand improvement activities on high site index, 0 to 40 percent slope areas.
ATBO	Timber Stand Improvement Lower Sites and Other Slopes	acres/area/period	Includes expenditures for timber stand improvement activities of lower site index, 0 to 40 percent slope areas.
TMGT	Trail Management	\$/area/year	This Forestwide cost includes only the costs of trail inventory work accomplished in the Forest Supervisor's Office.
TMFX	Timber Fixed Costs	\$/area/year	This Forestwide cost includes only the costs of maintaining the cutting atlas and the cost of backlog silvicultural exams.
RCFX	Engineering Fixed Cost	\$/area/year	This Forestwide cost includes all engineering costs that could not be broken down logically into unit costs.

ECONOMIC EFFICIENCY

Efficiency is the relationship between the quantity of an input and the amount of the resulting output. One of the primary measures of economic efficiency is present net value.

Present net value (PNV) is defined as the discounted difference between the dollar value of all priced outputs and the dollar value of all expenditures for management and investment. These were explained in the previous section. The greater the PNV, the greater the net economic return. 1980 was used as the base year and four percent was used as the discount rate in determining the PNV.

Economic efficiency is one of the driving forces in planning. As a result, all alternatives had the maximization of PNV as the final objective. This objective alone would have the effect of maximizing the economic return from the Forest. There are, however, desired benefits that cannot be converted to monetary returns. These are called nonpriced benefits and include things like threatened and endangered species habitat maintenance, reduction in soil loss, natural and scientific areas, historical or anthropological sites, visual quality, diversity, and recreation quality. These nonpriced benefits were included in the model as constraints and as coefficients that reflected the costs of managing for these benefits. Nonpriced benefits, together with the sum of PNV, yield net public benefit, which is a more inclusive measure of total social welfare.

ANALYSIS PRIOR TO FORMULATION OF ALTERNATIVES

INTRODUCTION

This section of the appendix describes the benchmark analysis that was conducted prior to the formulation of alternatives. Other analysis conducted before alternatives were formulated related to the development of prescriptions and coefficients. These are discussed in the sections of this appendix titled "Prescriptions" and "Coefficients". Table 88 displays the supply, projected demand, and assumptions used to calculate projected future use.

TABLE 88. Supply and Projected Future Use					
Resource Output	Aver. Annual Unit of Measure	Supply		Projected Future Use	
		Period one	Period 5	Period one	Period 5
Sawtimber	MBF	59856	41636	30000	30000
Sales Products (Pulpwood)	MBF	0	5215	1.2	5215
Fuelwood	MBF	17985.5	16954	22000	60000
Sold and Free Use					
Grazing	MAUM	342.2	445.8	--	--
Capacity Permitted	MAUM	--	--	383	445.8
Livestock Use					
Wilderness	MRVD	451.0	451.0	94.8	117.8
Recreation Developed	MRVD	171.4	351.0	171	275
2,270					
Recreation Dispersed	MRVD	557.5	5575	447.5	1062.2
Recreation Wildlife	MRVD	420	724	420	899
Water	ACF	339610	343849	351000	375000

RATIONALE FOR FUTURE USE ESTIMATES

Sawtimber: Based on projection of past use patterns and projections for future timber use, "The Outlook for timber in the United States", USDA, Dec. 5, 1972.

Products: Based on Maximum Timber Benchmark. Currently pulpwood is harvested in limited amounts on the Forest. Volumes displayed are available as markets develop.

Fuelwood: Based on projection of historical use trends.

Grazing Capacity: None

Grazing Permitted: Based on assumption that future use would exceed existing use levels and would be equal to maximum capacity if permitted by the Forest.

Wilderness Recreation: Based on assumption that future use will increase at the same rate as population growth.

Developed Recreation: Same as Wilderness Recreation

Dispersed Recreation: Same as Wilderness Recreation

Wildlife: Same as Wilderness Recreation

Water: Demanded level is assumed to be same as the Maximum Water Yield Benchmark level.

BENCHMARK ANALYSIS

Prior to alternative development, analyses were conducted to define the range within which integrated alternatives could be constructed. Benchmark analysis sets the threshold of feasibility for the alternative development decision space. An analysis of the management situation was completed to determine the ability of the planning area to supply goods and services [36 CFR 219.5 (e)]. The purpose of the analysis was to evaluate all potentials for multiple use in formulating a reasonable range of alternatives. Seventeen benchmarks representing a broad range of feasible options were generated through the FORPLAN model to identify opportunities for resolution of issues, concerns, and opportunities and to delineate the limits of the decision space in which feasible alternatives for resource mixes could be considered, given physical, biological, and legal criteria.

Maximum benchmark analysis falls into two categories. First, the monetary benchmarks projected maximum present net value (PNV) of those resources having an established market value or an assigned value and second, biological and physical benchmarks maximized various resource outputs.

The objectives of these analyses were to:

1. Explore the maximum economic and biological use and development opportunities of individual resources.
2. Evaluate capabilities between priced and nonpriced resource outputs and effects.
3. Determine the ability of the Forest to respond to major issues and concerns.

In addition to meeting the objectives, the benchmark analysis will:

1. Comply with the minimum legal management requirements of 36 CFR 219.27 (See Prescription section).
2. Estimate the schedule of management activities, resource outputs, effects, discounted benefits and costs, PNV, and acreages of prescription assignments appropriate to achieving the purposes of the benchmark.
3. Be approximately implementable.
4. Will not be constrained by budget except for the Low Intensity and Current direction benchmarks.
5. Use a Maximize PNV objective function to obtain a final analytical solution when FORPLAN is used.

The benchmark analyses conducted by the Forest as well as the purpose for each analysis are explained below. All analyses, except Minimum Level, were conducted using FORPLAN. Table 89 displays the objective function and constraints, including the applicable time periods, used to accomplish the objectives of each benchmark analysis. Minimum management requirements were included in all Benchmarks. These were included as standards and guidelines, and coefficients during the prescription development stage of the analysis (see Prescription and Coefficient sections of this appendix). No constraints were added to meet minimum management requirements. This approach provided assurance that the method of meeting minimum management requirements (MMRs) did not result in compounding the effects of MMRs.

1. **Minimum Level:** The Minimum Level defines the least cost program for keeping the Forest in public ownership. It provides for protection of soil and water resources and productivity of the land. The benchmark also provides for the protection of life, health, and safety of incidental users; the prevention of environmental damage to adjoining lands or downstream areas; and the administration of established special uses and minerals. The Minimum Level Benchmark was determined outside of FORPLAN. No management prescriptions were used. The purpose was to identify naturally-occurring outputs that are harvested without direct management actions with any associated costs. Outputs of water, minerals, dispersed and wildlife related recreation use, and soil loss were estimated. Costs of administering the land at minimum levels was also estimated.
2. **Low Budget Benchmark:** The Low Budget Benchmark will be used in the analysis to define the lower end of the feasible legal decision space. This level is the lowest intensity management possible.
3. **Current Direction Benchmark:** This benchmark is the "No Action" alternative that can be used to evaluate the consequences of continuing with the current management program. It is used as a basis of comparison with other benchmarks and alternatives.
4. **Maximize PNW Market Values:** This benchmark specifies the management which will maximize PNW using those outputs which have established market values. Only benefit values for timber and timber related outputs, range, and developed recreation were included in the objective function.
5. **Maximize PNW Assigned Values:** This benchmark specifies the management which will maximize the PNW of those outputs that have an established market price or an assigned monetary value. The objective function include benefit values for the following prices outputs: timber and timber related outputs; range; developed, dispersed, and wilderness recreation; wildlife recreation; water; and soil. The Maximum PNW Assigned Value Benchmark is the Maximum PNW Benchmark used for tradeoff comparisons.
6. **Maximize PNW Assigned With Sequential Lower and Upper Bounds:** This benchmark is similar to Benchmark 5 except it was run with a 25 percent lower and upper bound on timber as well as a floor/ceiling constraint on timber. It is used to analyze the effect of the nondeclining yield constraint.
7. **Maximize Timber Period 1:** This benchmark is intended to maximize net merchantable timber measured in thousand cubic feet (MCF) in the first period only. The second objective function maximized PNW for all periods using assigned benefit values. It is applied in the rollover run.
8. **Maximize Timber All Periods:** This benchmark is intended to maximize net merchantable timber volume harvested (MCF) for all periods. The rollover run maximized PNW for all periods using assigned values.
9. **Maximize Timber-Minimize Costs All Periods:** This benchmark is intended to maximize net merchantable timber volume harvested (MCF) for all periods, with minimum discounted total costs for all periods as the first rollover run. The second rollover run was intended to maximize PNW for all periods using assigned values.

10. Maximize Long Run Sustained Yield: This benchmark is intended to maximize long-run sustained yield (MCF). The rollover run maximized present net value (PNV) for all periods using assigned values.

11. Maximize Grazing Capacity: This benchmark is intended to maximize grazing capacity animal unit months for all time periods (AUMs). The rollover run maximized PNV for all periods using assigned values.

12. Maximize Wildlife: This benchmark is intended to maximize wildlife and fish RVDs for all time periods. The rollover run maximized PNV for all periods using assigned values.

13. Maximize Watershed Condition: This benchmark is intended to minimize soil loss (tons) for all time periods. The rollover run maximized PNV for all periods using assigned values.

14. Maximize Water Yield: This benchmark is intended to maximize water yield (acre feet) for all time periods. The rollover run maximized PNV for all periods using assigned values.

15. Maximize Recreation: This benchmark is intended to maximize recreation and wilderness RVDs, excluding wildlife, for all time periods. The rollover run maximized PNV for all periods.

16. Maximize Wilderness Acreage: This benchmark is intended to emphasize wilderness acreage and to maximize PNV for assigned values and all time periods. All nonwilderness prescriptions were excluded from availability for all wilderness study areas.

17. Minimize Wilderness Acreage: This benchmark is intended to emphasize nonwilderness and to maximize PNV for assigned values and all time periods. All wilderness prescriptions were excluded from availability for all wilderness study areas.

Each of the maximum single resource level benchmarks (7-17) provide the maximum amount of a single output that could be produced from the Forest. Standards for other resources are at least at the Low Intensity Level unless a higher standard is included to support the featured resource. The runs use different formulations and objective functions for each featured resource.

The purpose of single resource benchmarks is to determine the maximum acceptable range of each resource output while defining the upper end of the feasible decision space. The rollover run aspect of the FORPLAN runs are included to accomplish the second and third objective functions of the run. In most instances the rollover run maximizes PNV (unless indicated otherwise) and uses the outputs and costs obtained from the results of the first objective function as right-hand side constraints. Where no rollover run was required, only one objective function exists.

The cost and benefit values used in the FORPLAN model are discussed in the Coefficients section of this Appendix.

Table 89 provides a description of each benchmark developed. Each description includes the objective functions used, the constraints by period, and a discussion of the benchmark. The prescriptions used for the benchmarks are described in the Prescription section of this appendix. Definitions of the common constraints are provided in the "Alternatives" section of this appendix.

TABLE 89. Model Constraints and Prescription Controls

BENCHMARK: Low Budget						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4 5
Nondeclining Yield	MCF/Year					
Ending Inventory	MCF/Year					
Long-Run Sustained Yield Link	MCF/Year					
Floor/Ceiling						
Sawtimber	MBF/Year	GE LE	1 70000			
Net Merch. Vol.	MCF/Year	GE LE	1 400000			
Culmination Mean Annual Increment						
Minimum Mgmt. Requirement						
Budget	M\$	LE	5853	5853	5853	5853 5853

Discussion: Nondeclining yield [36 CFR 219.16(a)(1)], ending inventory [36 CFR 219.16(a)(2)(iv)], and long-run sustained yield link [36 CFR 219.16(a)(1)] comply with legal requirements. Nondeclining yield applies to all time periods while ending inventory and long-run sustained yield link apply to Period 8.

Floor/ceiling constraints were placed on sawtimber and net merchantable timber but were not binding. The constraints were placed on these outputs to allow the option of rerunning the benchmark without recreating the matrix, resulting in a substantial dollar savings. Culmination of mean annual increment was used in RMYLD calculations to require final removal at or beyond CMAI. Results of RMYLD were used in the SALT model to develop timber yield coefficients for FORPLAN. The budget in each of the first five periods is constrained to be less than or equal to 75 percent of the budget constraint for Period 1 of the Current Benchmark.

BENCHMARK: Current						
OBJECTIVE FUNCTION: Maximize PNV						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4 5
Nondeclining Yield	MCF/Year					
Ending Inventory	MCF/Year					
Long-Run Sustained Yield	MCF/Year					
Culmination Mean Annual Increment						
Minimum Mgmt. Requirement						
Floor/Ceiling Constraint						

BENCHMARK: Current (Continued)								
OBJECTIVE FUNCTION: Maximize PNV								
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD					
			1	2	3	4	5	
Sawtimber	MBF/Year	GE LE	31000 40000					
Net Merch Tmb Vol	MCF/Year	GE LE	1 400000					
Budget	M\$	LE	7804	7804	8194	8604	9034	

Discussion: The discussion concerning the nondeclining yield (NDY), ending inventory (EI), long-run sustained yield link (LRSY-L), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table.

Only the Current prescriptions were available for selection in this benchmark. Wilderness study areas were not available for nonwilderness activities. Net Merchantable Timber Volume harvested in the first decade was to be no greater than the quantity specified in the current timber management plan. Budgets for the first two decades were constrained as per Regional direction (R-3 Supplement No. 6). For decades three through five, a five percent increase per decade was applied. The budget constraint includes all funds expended by the Forest except purchaser credit and election, allocated funds from other agencies, human resource programs, and range betterment funds held in the Regional Office.

The sawtimber floor constraint was binding at 31,000 MBF as was the Budget constraint for the first three decades at \$7,804,000, \$7,804,000, and \$8,194,000 respectively.

BENCHMARK: Maximize PNV Market Value								
OBJECTIVE FUNCTION: Maximize PNV all periods using market benefit values								
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD					
			1	2	3	4	5	
Nondeclining Yield	MCF/Year							
Ending Inventory	MCF/Year							
Long-Run Sustained Yield	MCF/Year							
Culmination Mean Annual Increment								
Minimum Mgmt. Requirement								
Acre Per Acre Whole Forest	Acres/Period	GE LE	3342890 3342891					
Acre Per Acre Admin. Sites	Acres/Period	GE LE	25 26					

Discussion: The discussion concerning the nondeclining yield (NDY), ending inventory (EI), long-run sustained yield link (LRSY-L), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table.

This is a monetary benchmark. This run represents the most cost efficient method of managing the Forest for resources having established market values and the associated costs of producing those resource outputs. The constraints on "Whole Forest" and "Administrative Sites" are included to insure that the proper Administrative Site and Forestwide costs are applied.

BENCHMARK: Maximum PNV-Assigned Values						
OBJECTIVE FUNCTION: Maximize PNV using assigned benefit values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
Nondeclining Yield	MCF/Year					
Ending Inventory	MCF/Year					
Long-Run Sustained Yield	MCF/Year					
Culmination Mean Annual Increment						
Minimum Mgmt. Requirement						
Acre Per Acre Whole Forest	Acre/Period	GE	3342890			
		LE	3342891			
Acre Per Acre Admin. Sites	Acre/Period	GE	25			
		LE	26			

Discussion The discussion concerning the nondeclining yield (NDY), ending inventory (EI), long-run sustained yield link (LRSY-L), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table.

This is a monetary benchmark. The present net value (PNV) produced in this run is used as the reference point to evaluate the impact on PNV resulting from constraints applied in other runs. This run represents the most cost efficient method of managing the Forest based on resources having established market or assigned values with the associated costs of producing those resource outputs. The constraints on "Whole Forest" and "Administrative Sites" are included to insure that the proper Administrative Site and Forestwide costs are applied.

BENCHMARK: Maximize PNV Assigned W/Sequential Lower and Upper Bounds						
OBJECTIVE FUNCTION: Maximize PNV using assigned benefit values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
Ending Inventory	MCF/Year					
Sequential Upper/Lower Bounds	MCF/Year	LE	25%	25%	25%	25%
		LE	25%	25%	25%	25%
Culmination Mean Annual Increment						
Minimum Mgmt. Requirement						
Acre Per Acre Whole Forest	Acre/Period	GE	3342890			
		LE	3342891			
Acre Per Acre Admin. Sites	Acre/Period	GE	25			
		LE	26			

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table. A sequential lower and upper bound (SLUB) constraint was used in this run in place of nondeclining yield. The purpose of analyzing departures is to determine to what extent net public benefit can be improved through a departure from the base sale schedule of an original alternative. In this run, the average annual timber volume in each period is allowed to vary up to 25 percent above and 25 percent below the amount in the preceding period. The rationale for this constraint is found in [36 CFR 219.16(3)].

This is a monetary benchmark. This run is compared with the Maximum PNW Assigned Value Benchmark to determine the opportunity cost of the nondeclining yield constraint. The constraints on "Whole Forest" and "Administrative Sites" are included to insure that the proper Administrative Site and Forestwide costs are applied.

BENCHMARK: Maximize Timber Period 1							
OBJECTIVE FUNCTION: (1) Maximize net merchantable timber in period 1; (2) Maximize PMV using assigned values							
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Nondeclining Yield	MCF/Year						
Ending Inventory	MCF/Year						
Long-Run Sustained Yield	MCF/Year						
Culmination Mean Annual Increment							
Acre Per Acre Whole Forest	Acres/Period	GE	3342890				
		LE	3342891				
Acre Per Acre Admin. Sites	Acres/Period	GE	25				
		LE	26				

Discussion: The discussion concerning the nondeclining yield (NDY), ending inventory (EI), long-run sustained yield link (LRSY-L), and culmination mean annual increment (CMAI) constraints is covered in the Low Budget Benchmark section of this table.

This benchmark was used for timber analysis purpose. It is intended to maximize net merchantable timber in MCF in period 1. This run is set up with two objective functions. The first objective function is to maximize net merchantable timber in MCF in Period 1. The second objective function is to maximize PNW. The output levels of the first objective function are locked in and the run is "rolled over" and a new solution is developed using the second objective function--all within one FORPLAN run. The constraints on "Whole Forest" and "Administrative Sites" are included to insure that the proper Administrative Site and Forestwide costs are applied.

BENCHMARK: Maximize Timber All Periods							
OBJECTIVE FUNCTION: (1) Maximize Timber All Periods; (2) Maximize PNW using assigned values							
		UNITS OF	CONSTRAINTS BY PERIOD				
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
Ending Inventory	MCF/Year						
Sequential Upper/ Lower Bounds	MCF/Year	LE		25%	25%	25%	25%
		LE		25%	25%	25%	25%
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							

BENCHMARK: Maximize Timber All Periods [Continued]						
OBJECTIVE FUNCTION: Maximize PNv using assigned values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
Acre Per Acre Whole Forest	Acre/Period	GE	3342890			
		LE	3342891			
Acre Per Acre Admin. Sites	Acre/Period	GE	25			
		LE	26			

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table. A sequential lower and upper bound (SLUB) constraint was used in this run in place of nondeclining yield. The purpose of analyzing departures in this instance was to determine the opportunity costs associated with this objective through a departure from the base sale schedule. In this run, the average annual volume harvested in each period was allowed to vary up to 25 percent above and 25 percent below the amount in the preceding period. The rationale for this constraint is found in [36 CFR 219.16(3)].

The purpose of this benchmark is to maximize PNv while maintaining high levels of merchantable timber volume in MCF without maintaining nondeclining yield. It represents the most cost efficient method of managing the Forest under an objective of maximizing the biological potential of the timber resource. The first objective function for this run is to maximize timber for eight periods. The rollover run takes these results and applies the second objective function, which is to maximize PNv. The constraints on "Whole Forest" and "Administrative Sites" are included to insure that the proper Administrative Site and Forestwide costs are applied.

BENCHMARK: Maximize Timber Minimize Costs						
OBJECTIVE FUNCTION: (1) Maximize timber for all periods; (2) Minimize costs; (3) Maximize PNv for assigned values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
Ending Inventory	MCF/Year					
Sequential Upper/Lower Bounds	MCF/Year	LE		25%	25%	25%
		LE		25%	25%	25%
Culmination Mean Annual Increment						
Minimum Mgmt. Requirement						
Acre Per Acre Whole Forest	Acre/Period	GE	3342890			
		LE	3342891			
Acre Per Acre Admin. Sites	Acre/Period	GE	25			
		LE	26			

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this Table. A sequential lower and upper bound (SLUB) constraint was used in this run in place of nondeclining yield. The purpose of analyzing departures in this instance was to determine the opportunity costs associated with this objective through a departure from the base sale schedule. In this run, the average annual timber volume harvested in each period was allowed to vary up to 25 percent above and 25 percent below the amount harvested in the preceding period. The rationale for this constraint is found in [36 CFR 219.16(3)].

This benchmark provides a basis for determining opportunity costs associated with producing high levels of timber harvest at the least possible cost without maintaining nondeclining yield. The primary difference between this run and the Maximum Timber-Maximum PNW Benchmark is there is an additional objective function included. The first objective function maximizes timber for eight periods, the second objective function minimizes costs (the first rollover run), and the final objective function maximizes PNW (the second rollover run) for the results of the preceding two objective functions. The constraints on "Whole Forest" and "Administrative Sites" are included to insure that the proper Administrative Site and Forestwide costs are applied.

BENCHMARK: Maximize Long Run Sustained Yield							
OBJECTIVE FUNCTION: [1] Maximize LRSY; [2] Maximize PNW using assigned values							
	UNITS OF						
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
Ending Inventory	MCF/Year						
Sequential Upper/ Lower Bounds	MCF/Year	LE		25%	25%	25%	25%
		LE		25%	25%	25%	25%
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							
Acre Per Acre Whole Forest	Acres/Period	GE	3342890				
		LE	3342891				
Acre Per Acre Admin. Sites	Acres/Period	GE	25				
		LE	26				

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table. A sequential upper bound of 25 percent and a lower bound of 25 percent are used in this run.

The intent was to maximize long-run sustained yield while maintaining a high level of PNW. The benchmark contains two objective functions; the first was to maximize long-run sustained yield, and the rollover run run maximized PNW using the outputs from the first objective function. The constraints on "Whole Forest" and "Administrative Sites" are included to insure that the proper Administrative Site and Forestwide costs are applied.

BENCHMARK: Maximize Grazing Capacity							
OBJECTIVE FUNCTION: [1] Maximize grazing capacity AUMs; [2] Maximize PNW using assigned values							
	UNITS OF		CONSTRAINTS BY PERIOD				
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
Ending Inventory	MCF/Year						
Sequential Upper/ Lower Bounds	MCF/Year	LE		25%	25%	25%	25%
		LE		25%	25%	25%	25%
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							
Floor/Ceiling							
Sawtimber	MBF/Year	GE	20000				
		LE	70000				

BENCHMARK: Maximize Grazing Capacity Benchmark Run (Continued)						
OBJECTIVE FUNCTION: (1) Maximize grazing capacity AUMs; (2) Maximize PNV using assigned values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
Acre Per Acre Whole Forest	Acres/Period	GE	3342890			
		LE	3342891			
Acre Per Acre Admin. Sites	Acres/Period	GE	25			
		LE	26			

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (IMR) constraints is covered in the Low Budget Benchmark section of this table. A (SLUB) sequential upper bound of 25 percent and a lower bound of 25 percent are used in this run. The SLUB and the timber floor/ceiling were applied to insure that the timber output is no more than results of the Maximum Timber Benchmark.

This is a biological benchmark designed to establish the high level of grazing capacity to be used for emphasizing grazing outputs on the Forest while integrating other resource outputs in a cost effective manner. The first objective function maximized grazing capacity, and the second maximized PNV based on the results of the first objective function. The constraints on "Administrative Sites" and "Whole Forest" were included to insure that the proper Administrative Site and Forestwide costs were applied.

BENCHMARK: Maximize Wildlife						
OBJECTIVE FUNCTION: (1) Maximize wildlife RVDs; (2) Maximize PNV using assigned values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
Ending Inventory	MCF/Year					
Sequential Upper/Lower Bounds	MCF/Year	LE		30%	30%	30%
		LE		30%	30%	30%
Culmination Mean Annual Increment						
Minimum Mgmt. Requirement						
Floor/Ceiling						
Sawtimber	MBF/Year	GE	20000			
		LE	70000			

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table. A sequential upper bound of 30 percent and a lower bound of 30 percent were used in this run. Because the run had only maximum wildlife prescriptions to choose from, there was only a limited number of timing options available. For this reason, the 30 percent SLUB was used to allow more flexibility in meeting the objectives of the run. The floor on Sawtimber volume was used to insure the necessary volume of timber was harvested to meet the objectives of the benchmark.

This is a biological benchmark. It established the high level of wildlife and fish user days to be used for emphasizing wildlife outputs on the Forest. In this run, only the maximum wildlife prescriptions were available for the model to choose. The first objective function maximized wildlife recreation visitor days (RVDs), and the second maximized PNV using assigned values.

BENCHMARK: Maximize Watershed Condition							
OBJECTIVE FUNCTION: (1) Minimize soil loss; (2) Maximize PNW using assigned values							
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4	5
Ending Inventory	MCF/Year						
Sequential Upper/ Lower Bounds	MCF/Year	LE		50%	50%	50%	50%
		LE		50%	50%	50%	50%
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table. A sequential upper bound of 50 percent and a lower bound of 50 percent are used in this run. Only maximum watershed condition prescriptions were available for consideration in this benchmark.

This benchmark represents the most cost efficient method of managing the Forest under an objective of emphasizing management prescriptions which accelerate soil stabilization and incorporate special watershed restoration projects. It also provides a basis for determining opportunity costs associated with this emphasis. The first objective function minimized soil loss and the second objective function maximized PNW.

BENCHMARK: Maximize Water Yield							
OBJECTIVE FUNCTION: (1) Maximize water yield--acre feet; (2) Maximize PNW using assigned values							
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4	5
Ending Inventory	MCF/Year						
Sequential Upper/ Lower Bounds	MCF/Year	LE		25%	25%	25%	25%
		LE		25%	25%	25%	25%
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							
Floor/Ceiling							
Sawtimber	MBF/Year	GE	20000				
		LE	70000				

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table. A sequential upper bound of 25 percent and a lower bound of 25 percent are used in this run.

This is a physical benchmark. It establishes the high level of water yield to be used for emphasizing water yield on the Forest. The first objective was to maximize water yield increase. The results of this run were then entered as a constraint and another run was made with an objective function to maximize PNW.

BENCHMARK: Maximize Recreation FVDs/Maximize PNV using assigned values rollover

Discussion: This is a physical benchmark. It establishes the base level of nonwildlife related recreation to be used for emphasizing recreation opportunities including developed, nonwilderness dispersed, and wilderness dispersed activities. This benchmark was developed by adding the maximum recreation emphasis prescription results to the Maximum PNV Benchmark results. PNV and outputs were adjusted as needed to reflect the results.

BENCHMARK: Maximize Wilderness Acreage

Discussion: This is a physical benchmark. It represents the most cost efficient method of managing the Forest under an objective of providing high levels of wilderness acres. This benchmark was developed from the Minimum Wilderness Benchmark. Effects on outputs were determined and the PNV was adjusted to reflect changes in benefits and costs.

BENCHMARK: Minimize Wilderness Acreage

OBJECTIVE FUNCTION: Maximize PNV for assigned values

CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Ending Inventory	MCF/Year						
Sequential Upper/Lower Bounds	MCF/Year	LE		25%	25%	25%	25%
		LE		25%	25%	25%	25%
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							
Acre Per Acre Whole Forest	Acre/Period	GE	3342890				
		LE	3342891				
Acre Per Acre Admin. Sites	Acre/Period	GE	25				
		LE	26				

Discussion: The discussion concerning the ending inventory (EI), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered in the Low Budget Benchmark section of this table. A sequential lower and upper bound (SLUB) constraint was used in this run in place of nondeclining yield. The purpose of analyzing departures is to determine to what extent net public benefit can be improved through a departure from the base sale schedule of an original alternative. In this run, the departure is allowed to vary up to 25 percent above and 25 percent below the base sale schedule. The rationale for this constraint is found in [36 CFR 219.16(3)].

This is a physical benchmark. It establishes the base level for wilderness acreage on the Forest. Prescription controls to exclude wilderness prescriptions from consideration on all roadless and wilderness study areas were utilized. The constraints on "Administrative Sites and "Whole Forest" were included to insure that the proper Administrative Site and Forestwide costs were applied.

BENCHMARK
RESULTS

TABLE 9D. Average Annual Output by Benchmark
Output: Allowable Sale Quantity (Net Merch. Timber Vol. MCF/yr)--NonPriced Output

Benchmark	1	2	3	4	5	6	7	8
Minimum Level	0	0	0	0	0	0	0	0
Low Int Level	4425	4425	4425	4425	4425	4425	4425	4425
Current Level	8289	8289	10713	11444	11444	11444	11444	11522
Max Timber								
1st Decade	14957	14957	14957	14957	14957	14957	15619	15619
Max Timber								
Min Cost	11511	14389	15564	18455	14957	13666	17082	16648
Max Grazing								
Capacity	10021	12526	15658	18238	13697	10259	12824	11721
Max Wildlife								
Habitat	5085	6203	8064	6480	8424	5897	5946	6044
Max Watershed								
Condition	3965	4380	6427	7843	3921	4324	3409	1704
Max Water								
Yield	18225	17444	13083	9812	7359	7029	5718	7147
Max Dispersed								
Recreation	8526	10658	13322	16281	12211	9158	11448	10198
Max PNV Assig								
w/25%								
sequential								
lower & upper	8526	10658	13322	16281	12211	9158	11448	10198
Max PNV-Market	11228	11228	11228	11228	11228	11228	11228	11228
Max Timber								
w/25%								
lower & upper								
(8 Periods)	15063	18829	14122	17652	13239	13529	16511	16278
Max Long Term								
Sust Yield	10346	12933	16166	20205	16319	12239	15299	15464
Max Wild	8526	10658	13261	16281	12185	9150	11436	10183
Min Wild	8526	10658	13322	16281	12211	9156	11448	10198
Max PNV								
Assigned	6481	6481	6481	6481	6481	6481	6481	6481

Output: Allowable Sale Quantity (Net Sawtimber--MBF/yr)

Minimum Level	0	0	0	0	0	0	0	0
Low Int Level	16450	16092	17708	13813	14629	16130	15572	18704
Current Level	31000	30239	36208	38655	46173	36603	45591	44226
Max Timber								
1st Decade	57981	54774	55599	48650	50207	46814	57934	60043
Max Timber								
Min Cost	44510	52795	55867	68855	46873	43449	62529	65778
Max Grazing								
Capacity	39394	46366	57695	64286	46970	32238	48143	45661
Max Wildlife								
Habitat	20000	22895	28523	27556	26729	20028	22805	24256
Max Watershed								
Condition	14663	16990	26336	32037	16484	15721	11925	6909
Max Water								
Yield	70000	69313	43970	32493	21092	22270	19397	27744
Max Dispersed								
Recreation	34199	39995	47456	61196	42486	29387	43929	39585
Max PNV Assig								
w/25%								
sequential								
lower & upper	34199	39995	47456	61196	42486	29387	43929	39585
Max PNV-Market	43071	41501	41537	35711	36847	37639	40967	43658

TABLE 9D. Average Annual Output by Benchmark (Continued)
Output: Allowable Sale Quantity (Net Sawtimber--MBF/yr) continued

Benchmark	Period							
	1	2	3	4	5	6	7	8
Max Timber								
w/25%								
lower & upper								
[8 Periods]	59856	69506	49532	60700	41636	40138	62739	61975
Max Long Term								
Sust Yield	41539	49672	57211	69068	59288	39098	56654	61286
Max Wild	34199	39995	47311	61196	42395	29387	43861	39509
Min Wild	34199	39995	47456	61196	42486	36512	43929	39585
Max PNV								
Assigned	24590	23676	24147	20823	20429	22520	24291	26438

Output: Allowable Sale Quantity (Net Products--MBF/yr)

Minimum Level	0	0	0	0	0	0	0	0
Low Int Level	0	161	290	2750	2270	914	1504	667
Current Level	3	787	797	3299	3901	5836	3090	5058
Max Timber								
1st Decade	0	1346	2705	4808	5511	6314	5298	6161
Max Timber								
Min Cost	0	1312	2686	3676	5137	7560	6074	6628
Max Grazing								
Capacity	0	782	2418	3763	4831	5317	3792	4066
Max Wildlife								
Habitat	0	95	774	2317	3401	2869	1716	1422
Max Watershed								
Condition	0	0	0	0	0	0	0	0
Max Water								
Yield	4	497	4868	2149	4495	2089	3073	2768
Max Dispersed								
Recreation	0	301	1694	2868	3477	5057	2762	3339
Max PNV Assig								
w/25%								
sequential								
lower & upper	0	301	1694	2868	3477	5057	2762	3339
Max PNV-Market	0	707	1991	5012	4650	4561	4026	4106
Max Timber								
w/25%								
lower & upper								
[8 Periods]	0	1497	3194	3902	5215	8228	5878	7388
Max Long Term								
Sust Yield	0	808	3365	3799	4520	6404	4362	5521
Max Wild	0	301	1684	2868	3475	5042	2757	3331
Min Wild	0	301	1694	2868	3477	5057	2762	3339
Max PNV								
Assigned	1	213	333	2869	3650	2935	2015	1262

TABLE 90. Average Annual Output by Benchmark (Continued)
Long Term Sustained Yield Capacity MVCF/yr

Benchmark	LTSYC (is calculated at the end of the planning horizon)	Period
Minimum Level	0	
Low Int Level	6249.0	
Current Level	13503.8	
Max Timber		
1st Decade	17807.5	
Max Timber		
Min Cost	17692.4	
Max Grazing		
Capacity	15531.5	
Max Wildlife		
Habitat	8774.3	
Max Watershed		
Condition	5918.0	
Max Water		
Yield	9899.7	
Max Dispersed		
Recreation	14509.6	
Max PNW Assig		
w/25%		
sequential		
lower & upper	14509.6	
Max PNW-Market	13741.4	
Max Timber		
w/25%		
lower & upper		
[8 Periods]	17764.3	
Max Long Term		
Sust Yield	18723.9	
Max Wild	14127.2	
Min Wild	14509.6	
Max PNW		
Assigned	9223.5	

Output: All Fuelwood (MBF/yr)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	0	0	0	0	0	0	0	0
Low Int Level	1018	1847.7	1441.8	2103.1	1478.6	1160.	1480.4	1092.1
Current Level	7734.5	7998.3	9282.6	9150.6	10591.	8986.7	8693.8	9076.8
Max Timber								
1st Decade	12312.6	14534.	14479.	15630.2	13532.1	13764.3	13392.8	13785.2
Max Timber								
Min Cost	6180.1	7721.5	9298.5	10713.2	8007.5	8042.8	7628.4	8326.4
Max Grazing								
Capacity	16805.7	18559.5	20090.4	20816.4	17975.7	16823.9	17071.3	16757.8
Max Wildlife								
Habitat	10937.4	13131.6	14486.4	13642.5	12591.9	11621.9	12107.6	11426.3
Max Watershed								
Condition	811.2	812.3	1222.	1667.6	840.6	911.	722.	349.
Max Water								
Yield	17300.5	18147.	18416.2	15442.8	14565.1	14690.6	15256.8	14285.5
Max Dispersed								
Recreation	10721.8	13984.3	15543.6	16148.2	13136.4	11920.4	13055.6	12571.6
Max PNW Assig								
w/25%								
sequential								
lower & upper	10721.8	13984.3	15543.6	16148.2	13136.4	11920.4	13055.6	12571.6
Max PNW-Market	9485.1	9837.0	10754.2	11536.0	9514.3	9567.5	9518.5	9665.3

TABLE 90. Average Annual Output by Benchmark (Continued)

Output: All Fuelwood (MBF/yr) (Continued)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Max Timber w/25% lower & upper [8 Periods]	12240.7	14941.5	14641.1	16539.2	12951.2	13307.9	13176.1	13613.8
Max Long Term Sust Yield	11105.3	13415.6	15453.	17065.1	15132.5	13013.3	14450.6	14188.1
Max Wild	10647.4	13881.4	15462.	15885.6	13063.8	11770.9	12884.5	12410.5
Min Wild	28123.3	13984.3	15541.6	16148.2	13136.4	11920.4	13055.6	12569.4
Max PNW Assigned	10378.5	13250.8	12916.9	12788.6	11721.6	10875.0	11712.0	10770.0

Output: Dispersed Recreation (MRVD/yr)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	447.5	358	286.4	220.1	183.3	0	0	0
Low Int Level	447.5	511.8	577.3	661.9	755.0	1454.4	3204.3	4591.3
Current Level	447.5	543.0	662.5	806.5	967.9	1556.0	3799.7	5519.6
Max Timber 1st Decade	447.5	543.0	660.7	804.4	965.6	1582.0	3825.8	5545.6
Max Timber Min Cost	447.5	520.9	601.4	702.1	813.7	1524.9	3542.8	5262.6
Max Grazing Capacity	447.5	543.0	660.7	804.4	965.6	1582.0	3825.8	5545.6
Max Wildlife Habitat	447.5	576.4	724.7	872.7	1062.2	1556.0	3799.7	5519.6
Max Watershed Condition	447.5	511.8	577.3	661.9	755.0	1454.4	3204.3	4591.3
Max Water Yield	447.5	511.8	577.3	661.9	755.0	1454.4	3204.3	4591.3
Max Dispersed Recreation	447.5	576.4	724.7	872.7	1062.2	1556.0	3799.7	5519.6
Max PNW Assig w/25% sequential lower & upper	447.5	543.0	660.7	804.4	965.6	1582.0	3825.8	5545.6
Max PNW-Market	447.5	520.9	601.4	702.1	813.7	1524.9	3542.8	5262.6
Max Timber w/25% lower & upper [8 Periods]	447.5	543.0	660.7	804.4	965.6	1582.0	3845.8	5545.6
Max Long Term Sust Yield	447.5	543.0	660.7	804.4	965.6	1582.0	3825.8	5545.6
Max Wild	440.0	535.5	653.5	797.0	955.0	1554.9	3797.8	5517.6
Min Wild	447.5	543.0	660.7	804.4	965.6	1582.0	3825.8	5545.6
Max PNW Assigned	447.5	543.0	660.7	804.4	965.6	1582.0	3825.8	5545.6

Output: Wildlife Recreation (MRVD/yr)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	40	30	28	28	27	0	0	0
Low Int Level	271	244	215	210	210	259	379	403
Current Level	310	277	262	235	243	293	268	257
Max Timber 1st Decade	320	322	367	389	442	595	940	1375
Max Timber Min Cost	318	224	166	143	143	174	169	157
Max Grazing Capacity	377	339	306	272	269	357	523	554
Max Wildlife Habitat	420	506	602	665	724	1022	1888	2524

TABLE 90. Average Annual Output by Benchmark (Continued)

Output: Wildlife Recreation (MRVD/yr) (Continued)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Max Watershed Condition	221	206	191	174	174	185	173	171
Max Water Yield	271	244	192	163	163	191	185	176
Max Dispersed Recreation	407	465	536	574	627	870	1477	1984
Max PNW Assig w/25% sequential lower & upper	407	465	536	574	627	870	1477	1984
Max PNW-Market	299	236	195	168	160	177	174	167
Max Timber w/25% lower & upper (8 Periods)	320	312	357	386	439	590	932	1365
Max Long Term Sust Yield	349	372	416	416	456	614	956	1387
Max Wild	407	465	536	574	627	870	1477	1984
Min Wild	407	465	536	574	627	870	1477	1984
Max PNW Assigned	419	501	594	658	718	998	1775	2306

Output: Wilderness Recreation (MRVD/yr)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	76.4	73.9	73.7	73.4	73.2	0	0	0
Low Int Level	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Current Level	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Max Timber 1st Decade	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Max Timber Min Cost	87.3	98.8	101.9	101.0	100.7	108.9	133.0	184.0
Max Grazing Capacity	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Max Wildlife Habitat	87.3	116.5	121.8	125.4	130.1	135.9	177.5	242.4
Max Watershed Condition	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Max Water Yield	101.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Max Dispersed Recreation	87.3	116.5	121.8	125.4	130.1	135.9	177.5	242.4
Max PNW Assig w/25% sequential lower & upper	87.3	104.1	112.4	114.5	117.2	129.9	129.9	236.4
Max PNW-Market	87.3	87.3	78.5	70.7	63.6	63.6	63.6	63.6
Max Timber w/25% lower & upper (8 Periods)	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Max Long Term Sust Yield	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
Max Wild	87.3	111.6	119.6	121.9	127.8	132.1	173.8	238.6
Min Wild	94.8	104.1	112.4	114.5	117.2	120.9	129.9	236.4
Max PNW Assigned	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.5

TABLE 90. Average Annual Output by Benchmark (Continued)

Output: Developed Recreation (MRVD/yr)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	171.4	0	0	0	0	0	0	0
Low Int Level	171.4	154.2	123.4	98.7	79.0	0	0	0
Current Level	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max Timber								
1st Decade	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max Timber								
Min Cost	171.4	154.2	123.4	98.7	79.0	0	0	0
Max Grazing								
Capacity	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max Wildlife								
Habitat	171.4	252.6	275.0	275.0	275.0	275.0	275.0	275.0
Max Watershed								
Condition	171.4	154.2	123.4	98.7	79.0	0	0	0
Max Water								
Yield	171.4	154.2	123.4	98.7	79.0	0	0	0
Max Dispersed								
Recreation	171.4	252.6	275.0	275.0	275.0	275.0	275.0	275.0
Max PNV assign								
w/25%								
sequential								
lower & upper	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max PNV-Market	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max Timber								
w/25%								
lower & upper								
[8 Periods]	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max Long Term								
Sust Yield	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max Wild	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Min Wild	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1
Max PNV								
Assigned	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1

Output: Permitted Use (MAUM/yr)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	0	0	0	0	0	0	0	0
Low Int Level	314570	310971	293540	288015	284662	284662	284662	284662
Current Level	338382	321574	298556	282650	269377	269377	269377	269377
Max Timber								
1st Decade	339367	322100	292413	282571	267002	267002	267002	267002
Max Timber								
Min Cost	339286	321830	295056	281767	266181	266181	266181	266181
Max Grazing								
Capacity	355211	372011	400882	418082	434573	434573	434573	434573
Max Wildlife								
Habitat	338766	320304	292519	289374	284628	284628	284628	284628
Max Watershed								
Condition	338243	321162	293476	288752	282910	282910	282910	282910
Max Water								
Yield	340318	323712	296266	281602	266388	266999	266999	266999
Max Dispersed								
Recreation	338860	321023	294267	281172	266494	266496	266496	266496
Max PNV assign								
w/25%								
sequential								
lower & upper	338860	321023	294267	281172	266494	266496	266496	266496
Max PNV-Market	350677	343110	327831	328031	326766	326766	326766	326766
Max Timber								
w/25%								
lower & upper								
[8 Periods]	339228	332232	295801	282714	267054	267054	267054	267054

TABLE 9D. Average Annual Output by Benchmark (Continued)

Output: Permitted Use [MAUM/yr] (Continued)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Max Long Term Sust Yield	339029	322151	296440	293758	288048	288048	288048	288048
Max Wild	338860	321023	294267	291172	286494	286496	286496	286496
Min Wild	338860	321023	294267	291172	286494	286496	286496	286496
Max PNV Assigned	339262	321023	293255	289588	285097	285097	285097	285097

Output: Grazing Capacity [MAUM/yr]---Nonpriced Output

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	0	0	0	0	0	0	0	0
Low Int Level	314570	310971	293540	289915	284662	284662	284662	284662
Current Level	314422	312402	298556	292650	289377	289377	289377	289377
Max Timber								
1st Decade	314948	312562	295413	292571	287002	289002	287002	287002
Max Timber Min Cost	314700	312097	295056	291767	286181	286181	286181	286181
Max Grazing Capacity	342281	372011	400882	418082	434573	434573	434573	434573
Max Wildlife Habitat	314062	310210	292519	288374	284628	284628	284628	284628
Max Watershed Condition	376247	418328	417665	410869	402609	382918	382918	382918
Max Water Yield	316192	313977	296266	291682	286386	286999	286999	286999
Max Dispersed Recreation	314399	311245	294267	291172	286494	286496	286496	286496
Max PNV assign w/25% sequential lower & upper	314399	311245	294267	291172	286404	286496	286496	286496
Max PNV-Market	332518	345946	340000	337310	332786	332786	332786	332786
Max Timber w/25% lower & upper [8 Periods]	314903	312712	295801	292714	287054	287054	287054	287054
Max Long Term Sust Yield	314705	312773	296440	293758	288048	288048	288048	288048
Max Wild	314399	311245	294267	291172	286494	286496	286496	286496
Min Wild	314399	311245	294267	291172	286494	286496	286496	286496
Max PNV Assigned	314564	310972	293255	289588	285097	285097	285097	285097

Output: Water Yield [AcFt/yr]

Benchmark	Period							
	1	2	3	4	5	6	7	8
Minimum Level	0	0	0	0	0	0	0	0
Low Int Level	336692	336980	337162	337678	337713	338198	337816	337939
Current Level	335892	335861	336255	335471	336000	338545	338788	338629
Max Timber								
1st Decade	336069	336362	336263	337549	337460	338263	338953	338720
Max Timber Min Cost	335738	335883	336168	337543	337271	337975	339062	338700
Max Grazing Capacity	355724	336610	337443	339426	339064	338769	339034	338977
Max Wildlife Habitat	335588	336205	336537	336853	337041	337673	337314	337588
Max Watershed Condition	334568	334067	333578	333680	333910	334371	332948	333206

TABLE 90. Average Annual Output by Benchmark (Continued)

Output: Water Yield (Acft/yr) (Continued)

Benchmark	Period							
	1	2	3	4	5	6	7	8
Max Water Yield	339610	341644	342696	343999	343949	344925	344257	344042
Max Dispersed Recreation	335501	336445	337082	338560	338585	338542	338618	338557
Max PNV assign w/25% sequential lower & upper	335501	336445	337082	338560	338585	338542	338618	338557
Max PNV-Market	336046	336413	336691	337619	337590	337442	338711	338651
Max Timber w/25% lower & upper (8 Periods)	335879	336811	336876	338315	337882	338037	339038	338640
Max Long Term Sust Yield	334950	335477	336327	337675	337676	337766	338743	338007
Max Wild	335501	336445	337082	338560	338585	338542	338618	338007
Min Wild	335501	336445	337082	338560	338585	338542	338618	338557
Max PNV Assigned	335708	336418	336499	337041	337504	337772	337494	3377699

TABLE 91. Comparison of Cumulative Economic Benefits, Costs and Present Net Value of Benchmarks to Maximum PNV Assigned Benchmark (thousands of 1980 Fourth Quarter Dollars)

Benchmarks	Present Value Benefits	Present Value Costs	Present Net Value	Percent difference in PNV from Max PNV Assigned
Max PNV Assigned*	609036	262918	346118	
Max. Wildlife Habitat	643532	316219	327319	-5
Max PNV Assigned (SLUB)	620279	299252	321027	-7
Minimum Wild. (SLUB)	620279	299252	321027	-7
Maximum Wild. (SLUB)	620109	299252	320946	-7
Max Disp. Rec. (SLUB)	620660	334663	295997	-15
Max LITSY	568371	318137	250234	-28
Max Timber (8 Per. SLUB)	562297	345965	216332	-37
Max Timber (1st Per.)	560049	344439	215610	-38
Max Grazing Capacity	516895	302178	214717	-38
Current	444510	252205	192305	-44
Max Water Yield	518125	328953	189172	-45
Max PNV Market	420430	251581	168849	-51
Low Intensity	366078	205519	160559	-54
Max Timber Min. Cost	426815	305053	121762	-65
Max Watershed Cond.	327740	245850	81890	-76
Min Level	70035	23673	46362	-87

The section on Coefficients explained the difference between market and assigned values for priced outputs. Two benchmarks were developed to examine the significant effects, if any, that market versus assigned values have on output levels. The Max PNV Assigned Benchmark has all priced outputs with market and assigned values available in the objective function of the model. The Max PNV Market Benchmark has only market value outputs in the objective function. Table 92 displays a comparison of the two benchmarks.

It was expected that the present net value (PNV) of the Maximum PNV Assigned Benchmark would be larger than the Maximum PNV Market Benchmark. The results of the solutions show this to be the case. It was also expected that the market value outputs would occur at higher levels in the Max PNV Market Benchmark. This expectation comes from the assumption that achieving significant levels of assigned value outputs can only occur by trading off significant amounts of market value outputs. This expectation holds true for all outputs except fuelwood sold (pinyon and juniper fuelwood). Higher outputs of wildlife RVDs, an assigned value output, are achieved by opening up pinyon and juniper stands so that additional forage

can be provided. While the harvest practices in these areas are designed to enhance wildlife habitat, they still result in fuelwood outputs. To a degree, this same situation exists with timber harvest. When timber is harvested intensively over large areas, however, old growth, cover and turkey habitats can be adversely effected and the overall wildlife recreation visitor day (RVD) level is reduced. Maintenance of these wildlife components at an optimum level for the Max PNW Assigned Benchmark results in timber outputs for the Max PNW Market Benchmark 69 percent higher than that of the Max PNW Assigned Benchmark. The main conclusion is that the Max PNW Assigned Benchmark does tradeoff some market outputs to reach the higher present net value.

TABLE 92. Comparison of Average Annual Outputs Having Market Prices with Outputs Having Assigned Values for Max PNW Assigned and Max PNW Market Benchmarks

Outputs having Market Value	Average Annual Outputs in Period			Total Cumulative Output for 8 Periods
	1	5	8	
Net Sawtimber (MBF)				
Max PNW Assg.	24590	28429	26438	4799100
Max PNW Mkt.	43071	36847	43658	8099870
Percent Change	75	80	65	69
Net Products (MBF)				
Max PNW Assg.	1	3650	1262	381260
Max PNW Mkt.	0	4650	4106	758241
Percent Change	-100	27	225	90
Fuelwood Sold (MBF)				
Max PNW Assg.	8771.2	10893.0	10253.9	2117942
Max PNW Mkt.	7110.6	8425.3	8559.7	1626254
Percent Change	-19	-23	-17	-23
Developed Rec. (MRVD)				
Max PNW Assg.	171.4	139.1	125.2	27049
Max PNW Mkt.	171.4	139.1	125.2	27049
Percent Change	0	0	0	0
Permitted Use (MAUM)				
Max PNW Assg.	339.26	285.10	285.10	54654.2
Max PNW Mkt.	350.68	326.77	326.77	65779.0
Percent Change	3	15	15	20
Free Fuelwood (MBF)				
Max PNW Assg.	1607.3	828.6	516.3	160459
Max PNW Mkt.	2374.5	1089.1	1104.9	262693
Percent Change	48	31	114	64
Dispersed Rec (MRVD)				
Max PNW Assg.	447.5	965.6	5545.6	581884
Max PNW Mkt.	447.5	813.7	5262.6	547374
Percent Change	0	-16	-5	-6
Wildlife Rec (MRVD)				
Max PNW Assg.	419	718	2306	282850
Max PNW Mkt.	299	160	169	36480
Percent Change	-29	-78	-93	-87
Wilderness Rec (MRVD)				
Max PNW Assg.	87.3	117.2	236.5	32257
Max PNW Mkt.	87.3	63.6	63.6	13417
Percent Change	0	-46	-73	-58
Water Yield Increase (Mac.Ft)				
Max PNW Assg.	335.71	337.50	337.70	67479.95
Max PNW Mkt.	336.05	337.59	338.65	67625.59
Percent change	.10	.03	.28	.22

Table 93 Acres Assigned to Prescription Levels by Benchmark—Acres															
Benchmarks	Prescription														
	W	B	C	O	T	U	G	R	I	J	K	L	M	1/	2/
Low	97321	20328	16244	3132237	0	43698	0	32780	0	0	0	0	0		
Current						3342608									
Max Timber															
1st	1883559	1194	175377	3700	116397	114069	145828	0	236409	0	0	0	664075		
Max Timber															
Min Cost.	0	0	229253	253284	2512682	298927	48462	0	0	0	0	0	0		
Max Range	139926	10771	4165	0	0	294995	997190	1848254	38317	0	0	8990			
Max Wild-															
Life	3342608														
Max Water															
Cond.														3342608	
Max Water															
Yield	2860625	0	0	0	221156	102483	0	0	0	0	0	0	0		158344
Max Rec.	2153127	38780	4190	3800	0	93648	0	0	0	0	5449	0	662258		
Max PNV															
Slub	2116327	69845	0	3700	0	348816	132652	0	0	0	7139	0	664075		
Max PNV															
Market	0	0	190350	187004	1933842	365445	389129	115967	141299	0	19573	0	0		
Max Timber															
Slub	1873186	1194	167044	3700	156757	119904	120340	0	236408	0	0	0	664075		
Max LTSY	1873186	5725	81337	3700	0	538466	175523	0	0	0	596	0	664075		
Max Wild.	2153127	38780	4190	3800	0	381356	93648	0	0	0	5449		662258		
Min. Wild.	2153127	38780	4190	3800	0	381456	93648	0	0	0	5449		662258		
Max PNV															
Assign.	2273865	23561	0	11500	0	345853	23538	0	0	0	210	0	664075		

1/ Special watershed condition prescription not included in Alternative runs because of high costs.

2/ Special water yield prescription not included in Alternative runs because of the small potential increase in water yield and other resource impacts.

FORMULATION OF ALTERNATIVES

Introduction

An alternative is a feasible management strategy that attempts to satisfy management goals. Different alternatives are generated by varying the type or emphasis of goals. Each alternative represents a different set of objectives, outputs, or constraints which represents different methods of satisfying identified public issues and management concerns as well as taking advantage of resource management opportunities.

The stages of the planning process preceding the formulation of alternatives combined and analyzed to provide the basis for alternatives include: identification of ICOs, development of criteria, data inventory and collection, and analyzing supply projected future use and production capabilities--the analysis of the management situation [AMS].

The AMS benchmark analysis explored a "reasonable range" of production possibilities within the parameters of supply, expected demand, and production capabilities.

The benchmark analyses provided the decision space within which integrated alternatives were formulated. An integrated alternative is one in which individual resource objectives are compatible with the minimum legal and resource integration requirements of 36 CFR 219.13 through 219.27.

The Formulation of Alternatives step examines a set of alternatives that reflect the complementary and competitive relationships among the goods, services, and uses produced by the Forest.

The National Forest Management Act (NFMA) implementing regulations [36 CFR 219.12(f)] specify guidelines and criteria which determine the reasonable range of alternatives. These are:

Alternatives shall be distributed between the minimum resource potential and the maximum resource potential to reflect, to the extent practicable, the full range of major commodity and environmental resource uses and values that could be produced from the Forest. Alternatives shall reflect a range of resource outputs and expenditure levels.

Alternatives shall be formulated to facilitate analysis of opportunity costs and the resource use and environmental tradeoffs among alternatives and between benchmarks and alternatives.

Alternatives shall be formulated to facilitate evaluation of the effects on present net value, benefits, and costs of achieving various outputs and values that are not assigned monetary values, but that are provided at specified levels.

Alternatives shall provide different ways to address and respond to the major public issues, management concerns, and resource opportunities identified during the planning process.

Reasonable alternatives which may require a change in existing law or policy to implement shall be formulated, if necessary, to address a major public issue, management concern, or resource opportunity identified during the planning process [40CFR 1501.7, 1502.14(c)].

At least one alternative shall be developed which responds to and incorporates the RPA Program tentative resource objectives for each forest displayed in the regional guide.

At least one alternative shall reflect the current level of goods and services provided by the unit and the most likely amount of goods and services expected to be provided in the future if current management direction continues. Pursuant to NEPA procedures, this alternative shall be deemed the "No Action" alternative.

Each alternative shall represent, to the extent practicable, the most cost efficient combination of management prescriptions examined that can meet the objectives established in the alternative.

Each alternative shall state at least: the condition and uses that will result from long-term application of the alternative; the goods and services to be produced; the timing and flow of these resource outputs together with associated costs and benefits; resource management standards and guidelines; and the purposes of the management direction proposed.

The Chief's policy letter of October 4, 1981, and FSM 1920.85--1 through 85--3 provide direction for formulating the following types of alternatives in addition to those specified in the NFMA regulations:

1. An alternative that emphasizes market opportunities.

Emphasis for the alternative is on timber, range, minerals, and other outputs that have the potential to produce income to the Government. Management for other resources will be at economically and environmentally feasible levels consistent with the emphasis on market-oriented outputs.

2. An alternative that emphasizes nonmarket opportunities.

The emphasis is on water, fish and wildlife, recreation, and other amenity values. Management for other resources will be at economically and environmentally feasible levels consistent with the emphasis on amenity values.

Specific requirements to be addressed in the alternative formulation process are presented in FSM 1920.85--1 through 85--2, ID No.6.

Alternative
Feasibility

Forest Service Manual 1920.85, R-3 ID No.6 specifies the range of reasonable alternatives which should be within the limits established by:

1. Technical feasibility--the inherent capability of the lands and resources as modified by varying levels of management and within the limits of existing or anticipated technology.
2. Economic and financial feasibility --the amount of funds expected to be available to conduct proposed and probable activities.
3. Legal feasibility--within the limits established by law, regulation, Executive Order, or Servicewide or Regional policy.

Alternative
Formulation
Process

A single FORPLAN solution that meets all objectives of the alternative and can be implemented administratively is very unlikely. As a result, alternatives were developed through a process of sequential incremental analysis by adding individual constraints or sets of constraints to the Maximum Present Net Value (PNV) Assigned Benchmark. The Max PNV Assigned Benchmark was used as the starting point for developing all alternatives except Alternative A [No Action], which was developed during the completion of the AMS.

The first step in the process of alternative formulation was to identify the management goals for the alternative and develop a list of tentative objectives for achieving the goals. The results of the Maximize PNV Benchmark was evaluated against the goals and objectives of each alternative.

An initial attempt was made to develop the objectives for the alternatives required by NFMA Regulations and the Chief's 1981 policy letter to provide separate alternatives which emphasize: RPA objectives, market opportunities, and nonmarket opportunities. Two commodity (market opportunities) emphasis alternatives were developed and considered in detail. The first emphasized range outputs while maintaining timber outputs as high as possible and the second emphasized timber outputs. One other alternative was developed and considered in detail. This was a special range-wildlife conflict resolution alternative to address specifically issues two and five. Because the Current Benchmark is the "No Action" alternative required by NEPA and NFMA, no adjustments were made in the benchmark solution to address issues. This benchmark became Alternative A.

After the goals and tentative objectives for an alternative were determined, the benchmarks were reviewed on a Forestwide basis and by individual analysis area to evaluate the Forest's ability to meet the objectives of each alternative. Evaluation was made in terms of the range of outputs determined by the benchmarks, issues and concerns to be resolved and opportunities presented, cost efficiency, and administrative feasibility.

Once the preliminary objective for an alternative had been defined and results of the benchmark analyses had been reviewed, changes were suggested for the Max PNV Assigned Benchmark. The proposed changes attempted to achieve better resolution of the IDO's; better attain the goals and objectives of the alternatives; and achieve a more easily implemented result in terms of administrative feasibility. These suggestions were translated into changes in the FORPLAN model by adding or eliminating constraints to the model.

A new solution or variation was developed based on the implemented changes to the model. The results of the variation were compared to preceding solutions to determine if the changes accomplished what was intended. If the changes did not achieve the intended purpose, additional refinements were suggested and a new variation was developed. This iterative process was repeated until a feasible solution was obtained which achieved the goals and objectives of the alternative.

As an alternative was developed, the tentative objectives were refined further by analyzing results of each variation for achievement of goals and objectives, optimum integration and production, cost efficiency, and administrative feasibility.

Constraints and prescription controls reflect output, funding levels, or management practices considered necessary by the Forest ID Team to achieve the goals and objectives of an alternative and to ensure that the alternative is administratively feasible. The constraints and prescription controls which are nonbinding have no impact on the solution. In situations where a floor/ceiling constraint was potentially necessary, nonbinding constraints were included to allow the option of running additional subsequent runs as needed in the future.

The set of constraints applied to the Maximum Present Net Value (PNV) Assigned Benchmark to achieve the goals and objectives of each alternative are shown in Table 96. A brief discussion of the constraints is also provided. Each constraint set represents professional judgment concerning the most cost efficient manner of achieving the goals and objectives of the alternative. The FORPLAN run with a "Maximize PNV" objective function provides the most economical and efficient solution within the constraint limitations placed on the model.

Description of Alternatives

alternatives considered in detail in the EIS are described below. It must be noted that the outputs and effects resulting from the alternatives must fall within the benchmark decision space. The following assumptions are common to all alternatives:

1. The minimum legal management requirements specified in 36 CFR 219.27 are met in accomplishing goals and objectives of the alternative and include: protection of soil and water resources; maintenance of habitat to assure viable fish and wildlife populations; and maintenance and improvement of T&E species habitat.
2. Permitted livestock use of the range forage resource is balanced with grazing capacity by the middle of Period 3, at the latest.
3. All alternatives provide for continuation of the existing electronic sites and power corridors.
4. All alternatives provide for maintenance of wilderness quality in wilderness study areas until Congress acts on recommendations.
5. All alternatives provide lands for the expansion of communities surrounded by National Forest System lands.
6. Pending establishment reports, all alternatives provide for protection and study of the following potential Research Natural Areas: 1) Turkey Creek in analysis area 8B is 1335 acres and features riparian hardwood as a major ecosystem; 2) Rabbit Trap in analysis area 7A is 297 acres and features scrub grassland; 3) Largo Mesa in analysis area 9A is 300 acres and features classic pinyon-juniper woodland; and 4) Agua Fria Mountain in analysis area 9B is 350 acres and features mountains grassland as a major ecosystem.

In addition to the assumptions listed above the following harvest constraints were common to all alternatives to comply with legal requirements of 36 CFR 291.16(a)(1), (a)(2)(iii) and (a)(2)(iv): nondeclining yield (NDY), allowable sale quantity long-term sustained yield capacity (ASQ LTSYC), harvest of even-aged stands at or beyond culmination of mean annual increment (CMAI); and perpetual timber harvest or ending inventory (EI). These constraints are defined in the "Constraints" section of this Appendix and in the glossary.

The following alternatives are described with discussion of significant resource elements. The constraints used to achieve the objectives of each alternative are shown in Table 96.

Alternative A

Alternative A reflects current management direction. Pursuant to NEPA procedures, this alternative shall be deemed the "No Action" alternative.

The objective of this alternative is to establish a base of comparison for all other alternatives by projecting current management direction and practices into the future while managing on an annual constrained budget of \$7,804,000 (1980 fourth quarter dollars) for Periods 1 and 2. This budget is closely based on the Forest's 1983 fiscal year planned budget. This alternative is the same as the Current level Benchmark and is based on the assumption that current management direction will continue.

The model was constrained to select only current level prescriptions. No conscience attempt was made to resolve issues, concerns, or opportunities. Constraints on "Administrative Sites" and "Whole Forest" areas were included to insure that proper Administrative sites and Forestwide costs were applied.

Alternative B

The objective of Alternative B is to maximize present net value (PNV) while attempting to meet the Resource Planning Act (RPA) targets assigned to the Forest by the Regional Guide for Periods 1 through 5. General guidelines for developing this alternative are outlined in FSM 1920.85--2 through 85--3, R-3 ID No. 6. No budget constraint was used.

The constraints (see Table 96) are included in an effort to meet the RPA targets assigned to the Forest. The combination of constraints and objective functions resulted in an alternative that came as close as possible to meeting the RPA targets. The developed recreation target cannot be met without building an unrealistic number of additional campgrounds on the Forest. The wildlife, range, and timber targets were accomplished. Target levels were not assigned for support activities such as reforestation and TSI. It was determined that the level assigned should be the level necessary to meet the primary output targets at minimum costs.

Alternative C

Alternative C emphasizes market opportunities, particularly range outputs. It was developed to maximize present net value (PNV) with an emphasis on outputs having market values (ie. sawtimber and timber related products, permitted livestock use, developed recreation). Management for other resources was maintained at feasible levels consistent with the emphasis on market oriented outputs.

The constraints as displayed in Table 96 were implemented in an attempt to allow range outputs to be at a level approximately equal to what is currently being grazed on the Forest, with management for other resources maintained at levels consistent with the emphasis of a market oriented run. Several variations were required to reach an acceptable alternative.

Alternative D

Alternative D also emphasized market opportunities, particularly timber outputs. It was developed to maximize present net value (PNV) with an emphasis on outputs having market values. Management of other resources is at economically and environmentally feasible levels consistent with the emphasis on market oriented outputs.

Regional direction to the Forest recommended an alternative be developed that harvested more sawtimber in the first time period. To accomplish this within the allowable budget level, the level of permitted livestock AUMs was reduced and the Forest budget was increased (as per Regional direction).

Alternative E

Alternative E is designed to improve the utilization of range resources and improve range capacity. Demand for grazing use currently exceeds capacity, however, opportunities are available to increase production capability and reduce conflicts with other resources. The primary conflict is between range and wildlife. The purpose of the alternative was to provide a relatively high level of permitted AUMs by the fifth decade and maintain wildlife habitats at a relatively high level. Timber would be at a level that could be accomplished with the remaining budget, or in conjunction with range and/or wildlife projects.

Alternative F

Alternative F emphasizes nonmarket opportunities. It was developed to maximize PNV with emphasis on amenity values (ie. wildlife, dispersed and developed recreation RVDs, quality of wilderness experience, watershed condition, and other amenity values). Management for other resources was at economically and environmentally feasible levels consistent with the emphasis on amenity values.

Proposed Action

This alternative was formulated to provide a preferred or proposed action alternative. The objectives of this alternative are: 1) to maximize present net value (PNV) subject to a budget constraint; 2) to respond to issues, concerns, and opportunities as much as possible; and 3) to maintain or, when possible, improve existing programs which are not identified as an issue. The budget constraint is one that reflects feasible anticipated appropriations. This limits issue resolution.

The alternative was developed incrementally, using the Max PNV Assigned Benchmark as a starting point. Each variation, with associated constraints, is further displayed in Table 96.

The present net value (PNV) of each alternative and the percent change from the next lowest PNV Benchmark shown in Table 94. Present value cost (PVC), present value benefits (PVB), and PNV are shown in decreasing order of PNV for each alternative.

Table 95 displays priced and nonpriced outputs by alternative and time period. The figures are the average annual output by alternative.

TABLE 94 Value Analysis (millions of 1980 4th Quarter dollars)

	PA	A	MAX PNV	Alternative E	F	G	D	B
PVC	234.1	252.2	253.2	255.6	262.7	285.2	289.7	297.6
CHANGE Betw. Alt.	+18.1	+1.0	+2.4	+7.1	+22.5	+4.5	+7.9	
PVB	474.3	444.5	612.7	499.2	603.9	431.7	455.8	491.7
CHANGE Betw. Alt.	-29.8	+168.2	-113.5	+104.7	-172.2	+24.1	+35.9	
PNV	240.2	192.3	359.5	243.6	341.2	146.5	166.1	194.1
CHANGE Betw. Alt.	-47.9	+167.2	-115.9	+97.6	-194.7	+19.6	+28.0	
PVB by Resource Category								
Developed Recreation	17.4	15.7	15.7	17.4	17.4	15.7	15.7	22.2
Disp. Rec/Wildlife	280.1	246.7	441.8	309.2	435.6	209.4	216.6	272.2
Wilderness	30.4	30.4	30.4	30.4	31.0	30.4	30.4	30.4
Sawtimber/Products	71.1	84.9	57.6	65.2	53.5	100.4	120.8	91.7
Fuelwood	2.9	1.8	2.6	2.0	1.8	2.2	2.3	2.7
Range	72.5	65.2	64.8	75.1	64.8	73.8	70.2	72.6
Water Yield	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	-0.1
PVC by Major Budget Cost Category								
Timber	42.1	72.8	28.6	46.3	42.8	69.4	94.5	72.3
Rec./Wildlife	23.5	14.6	49.6	24.1	54.0	12.1	12.1	33.0
Range	24.2	16.9	14.8	27.6	14.6	26.4	20.5	27.0
Protection	75.1	81.2	86.2	85.5	86.1	102.9	88.2	88.3
Roads/FAO	20.9	19.6	22.5	26.7	18.7	26.0	26.0	26.7
Other	48.3	47.1	51.5	45.4	46.5	48.4	48.4	50.3

TABLE 95. Average Annual Output by Alternative

Output: Allowable Sale Quantity (Net Merch. Timber Volume--MCF/yr) NonPriced Output

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNW Assigned	6480.8	6480.8	6480.8	6480.8	6480.8	6480.8	6480.8	6480.8
PA	8326.5	8326.5	8326.5	8326.5	8326.5	8326.5	8326.5	8326.5
A	8288.7	8288.7	10712.9	11444.2	11444.2	11444.2	11444.2	11522.4
B	9807.3	9807.3	11128.2	11128.2	11128.2	11128.2	11128.2	11128.2
C	11127.5	11160.0	11160.0	11160.0	11160.0	11159.9	11159.9	11159.9
D	13551.6	13551.6	13551.6	13551.6	13551.6	13551.6	13814.1	13814.1
E	7186.8	7186.8	7186.8	7186.8	7186.8	7186.8	7186.8	7186.8
F	3486.6	7269.9	7269.9	7269.9	7269.9	7272.0	7272.0	7272.0

Output: Allowable Sale Quantity (Net Sawtimber--MBF/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNW Assigned	24590	23676	24147	20823	20429	22520	24291	26438
PA	30000	30000	30000	30000	30000	30000	30000	30000
A	31000	30239	36208	39655	46173	36682	44590	44245
B	36877	36746	40639	33077	37779	37497	41601	43009
C	42666	40790	40735	38697	41246	37520	40470	45308
D	53089	50160	48422	46622	47874	44412	50339	54953
E	26152	26349	27157	23824	25037	23303	26275	28439
F	13803	26376	25442	25618	24782	24854	28092	28949

Output: Allowable Sale Quantity (Net Products--MBF/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNW Assigned	548.0	213.0	303.0	2869.0	3650.0	2935.0	2015.0	1262.0
PA	548.0	658.0	1174.0	3134.8	3858.8	3508.9	2583.3	2949.1
A	3.3	787.0	797.0	3299.0	3900.8	4236.1	3090.3	5058.1
B	2.5	566.0	1341.7	5847.4	4769.1	5090.7	3779.6	4037.4
C	1.5	519.9	2558.1	2981.7	2567.4	4278.5	3690.6	3669.4
D	0	867.1	3296.7	3181.9	3650.9	6043.1	4568.9	4825.8
E	0	259.7	657.6	3044.5	1969.4	2936.8	2397.3	2092.1
F	0	259.3	383.2	2222.4	2249.1	3546.8	2043.5	19907.6

Output: Long Term Sustained Yield Capacity (MCF/yr)

Alternative	Period
	8
Max PNW Assigned	LTSYC is calculated at the end of the planning horizon.
PA	9223.5
A	10604.5
B	15507.8
C	13770.1
D	13095.4
E	16928.4
F	9699.3
F	10004.0

Output: All Fuelwood (MBF/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNW Assigned	10378.5	13250.8	12916.9	12788.6	11721.6	11096.0	12031.0	10977.0
PA	11887.3	12753.8	14927.4	15199.2	14835.3	13931.6	14381.7	14057.6
A	7734.5	7988.2	9282.6	9150.6	10591.0	9006.7	8593.9	9176.8
B	10409.8	12056.4	14602.5	15480.0	14918.3	13041.0	13968.9	13095.8
C	9235.5	9930.4	11238.9	11929.0	10632.6	10850.1	10238.7	11048.8
D	9844.6	10339.7	11520.2	11829.5	10733.9	11051.1	10610.1	11320.3
E	6965.9	9265.8	11165.1	11977.0	10258.0	9942.9	10197.4	9928.0
F	6297.5	9021.2	9774.5	10807.7	8451.1	8196.8	8528.4	8053.7

TABLE 95. Average Annual Output by Alternative (Continued)

Output: Dispersed Recreation (MRVD/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNV Assigned	447.5	543.0	660.7	804.4	965.6	1582.0	3825.6	5545.6
PA	447.5	543.8	662.5	806.5	967.9	1556	3799.7	5519.6
A	447.5	543.8	662.5	806.5	967.9	1556	3799.7	5519.6
B	447.5	543.8	662.5	806.5	967.9	1556	3799.7	5519.6
C	447.5	543.0	660.7	804.4	965.6	1582	3825.8	5545.6
D	447.5	543.0	660.7	804.4	965.6	1582	3825.8	5545.6
E	446.1	542.8	660.6	804.5	965.9	1554	3799.7	5517.6
F	446.1	542.1	660.6	804.6	965.9	1554	3799.7	5517.6

Output: Wildlife Recreation (MRVD/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNV Assigned	419	501	594	658	718	998	1775	2406
PA	317	325	308	393	355	355	355	355
A	310	277	262	235	243	273	268	257
B	297	309	324	328	350	307	305	301
C	284	223	189	155	137	158	155	146
D	307	230	188	161	148	179	172	162
E	328	347	377	386	403	510	789	951
F	422	494	577	633	691	972	1749	2288

Output: Wilderness Recreation (MRVD/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNV Assigned	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.5
PA	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
A	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
B	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
C	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
D	87.3	104.1	112.4	114.5	117.2	129.9	171.6	236.4
E	88.9	106.0	114.5	116.7	119.5	122.9	173.6	233.6
F	88.9	106.0	114.5	116.7	119.5	132.1	173.8	233.6

Output: Developed Recreation (MRVD/yr)

Alternative	Period								Max
	1	2	3	4	5	6	7	8	
PNV Assigned	171.4	190.8	171.7	154.5	139.1	125.2	125.2	125.2	
PA	171.4	190.8	190.8	190.8	190.8	190.8	190.7	190.7	
A	171.4	190.8	171.7	154.5	139.1	125.1	125.1	125.1	
B	171.4	252.6	275.0	275.0	275.0	275.0	275.0	275.0	
C	171.4	190.8	171.7	154.4	139.1	125.0	125.1	125.1	
D	171.4	190.8	171.7	154.4	139.1	125.0	125.1	125.1	
E	171.4	190.8	190.8	190.8	190.8	190.6	190.7	190.7	
F	171.4	190.8	190.8	190.8	190.8	190.6	190.7	190.7	

Output: Permitted Use (AUM/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNV Assigned	339262	321023	293255	289588	285087	285087	285087	285097
PA	347266	345837	346634	350000	350000	350000	350000	350000
A	338332	321574	298556	292650	289377	289377	289377	289377
B	349001	345365	346343	352005	354000	354000	354000	354000
C	355211	372011	400000	400000	400000	400000	400000	400000
D	339734	334097	334095	337876	340000	340000	340000	340000
E	350305	352144	361348	371918	380000	380000	380000	380000
F	314151	310577	293050	289842	284547	284547	284547	284547

TABLE 95. Average Annual Output by Alternative (Continued)

Output: Grazing Capacity (AUM/yr)--Nonpriced Output

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNVA Assigned	314564	310972	293255	288612	285166	285166	285166	285166
PA	329984	345837	346634	350000	350000	350000	350000	350000
A	314422	312402	298556	282650	289377	289377	289377	289377
B	330849	346364	346343	352005	354000	354000	354000	354000
C	342201	372011	400000	400000	400000	400000	400000	400000
D	317598	334097	334095	337878	340000	340000	340000	340000
E	330602	352144	361346	371916	380000	380000	380000	380000
F	314151	310577	293050	289842	284547	284547	284547	284547

Output: Water Yield (AcFt/yr)

Alternative	Period							
	1	2	3	4	5	6	7	8
Max PNVA Assigned	335708	336418	336199	337041	337504	337772	337494	337769
PA	337083	337106	337473	338083	338167	338252	338462	338543
A	335892	335631	336255	335471	336000	336545	336788	336829
B	336934	336680	337091	337605	337776	339115	339182	339428
C	335819	336485	336748	337328	337327	338270	338600	338309
D	335559	336361	336747	337095	337193	338378	338767	338546
E	336221	336735	336871	337556	337673	338212	338088	338329
F	335477	336166	335908	336796	337056	337612	337421	337620

CONSTRAINTS

Constraints and prescription controls are used to ensure that outputs, effects, and Forest conditions will be produced in the proportions required to achieve the particular goals and objectives of an alternative.

Absolute and flow constraints are two general types of constraints used in FORPLAN to control activities and outputs. These were specified by analysis area and/or time period.

Absolute constraints are used to constrain the amount or dollar value of some output or activity in some period. A minimum amount, maximum amount, or range was specified.

Flow constraints were used to constrain the relation between the amount or value of some activity or output that occurred in consecutive periods. Harvest flow is the most common example, and the required relationship between harvests in adjacent periods is so important that it is given its own constraint set--timber harvest constraints. Flow constraints can be used to specify minimum or maximum proportionate decline from period to period, a minimum or maximum proportionate increase from period to period, or a range in which decline or increase from period to period is permitted.

Table 96 displays the constraints and prescription controls used for the alternatives.

The following discussion of terminology is provided to assist in understanding the tables.

LE--The model is not to exceed the values for the constraint in the specified time period(s).

GE--The model must achieve, at a minimum, the values for the constraint in the specified time period(s).

EQ--The model must achieve exactly the value listed for the constraint in the specified time period(s).

Budget Constraints--Budget constraints were used to ensure financial feasibility. Budgets are in 1980 fourth quarter dollars and exclude timber purchaser road construction and purchaser credit.

Floor/Ceiling--Floor (a lower limit) and ceiling (an upper limit) constraints were used to ensure physical or biological feasibility. They were used to set the lower and upper limits on levels of outputs allowable for specific alternatives.

Timber Harvest Constraints--Allowable sale quantity (ASQ) constraints consist of constraints which can be imposed for a set of time periods or intervals specified by the user. Allowable sale quantity in FORPLAN is the average annual net merchantable timber volume for a time period. Allowable sale quantity constraints include: nondeclining yield (NDY) which specifies that ASQ must be equal to or greater than the planned sale volumes from the preceding period; sequential lower bound requires that the ASQ must not decline more than a specified proportion between consecutive periods. Nondeclining yield is a special case of this constraint when the proportion is set at zero and sequential upper bound requires that the ASQ must not increase more than a specified proportion between consecutive periods.

Long term sustained yield capacity (LTSYC) is defined by NFMA [36 CFR 219.3] as the "highest uniform wood yield from lands being managed for timber production that may be sustained under a specified management intensity consistent with multiple use objectives". The LTSYC is calculated by SALT for each prescription from RMYLD output. It is calculated as follows:

$$LTSYC_p = \sum_{S=1}^1 \frac{TVny}{R_p} \frac{S_A}{A_A}$$

where:

LTSYC_p=Long term sustained yield capacity for a given prescription
 TVny=Total net merchantable yield volume, cubic feet obtained from RMYLD by applying defect factor to the gross yield volume
 R_p=Number of ten year periods in strata rotation age of strata
 S_A=Strata acres with the analysis area
 A_A=Total analysis area acres
 S=Strata 1,2,...,1

The SALT output is divided by ten before entering the coefficient into FORPLAN in order to convert the units to MCF per acre per year.

The FORPLAN LTSYC for a given analysis area, based on prescriptions allocated in the model's solution, is:

$$LTSYC_A = \sum_{P=1}^1 [LTSYC_p] (P_A)$$

where:

P=Prescription 1,2,3,...allocated to analysis area
 LTSYC_A=FORPLAN LTSYC coefficient
 P_A=acres of analysis area allocated to prescription

and Forestwide LTSYC in MCF/yr. is:

$$LTSYC_{FW} = \sum_{A=1}^1 \sum_{p=1}^1 [LTSYC_p] (P_A)$$

where:

A=Analysis Area 1,2,3, etc.

Nondeclining Yield-Long Run Sustained Yield Link (NDY-LRSYL) This constraint states that the harvest in the last period must be less than or equal to long term sustained yield capacity, Forestwide.

Nondeclining Yield (NDY) is defined in 219.6 (a)(1) of NFMA as follows: "For the base sale schedules, the planned sale for any future decade shall be equal to or greater than the planned sale for the preceding decade of the planning periods, provided that the planned sale is not greater than the long-term sustained yield capacity consistent with the management objectives of the alternative".

Perpetual Timber Harvest and Ending Inventory is defined by the NFMA Regulations in the following way: "Each sale schedule shall provide for a forest structure that will enable perpetual timber harvest which meets the principle of sustained yield and multiple-use objectives of the alternative" [36 CFR 219.16 (a)(2)(iv)].

The perpetual timber harvest [ending inventory] constraint attempts to meet this requirement by insuring that for the Forest, the net merchantable timber inventory in the last ten year period of the planning horizon is equal to or greater than the sum of the weighted average of net merchantable timber volume for each regenerated strata [age class] in the prescription during each regenerated strata's rotation length.

The ending inventory coefficient used in the FORPLAN model is calculated by SALT based on RMYLD outputs for each regenerated timber strata within a prescription. The formula used by SALT to calculate the EI coefficient for each prescription is:

$$EI_p = \sum_{S=1}^1 \frac{TV_n}{R_p} \frac{S_A}{A_A}$$

where:

EIp=Ending inventory coefficient for analysis area prescription
 S=Strata 1,2,3,4,1 for prescription
 TVn=Total net merchantable timber volume in MCF over rotation length of strata. Total net merchantable volume is the volume obtained by summing the merchantable volume, minus defect from RMYLD, for each ten year period of the strata's rotation.
 Rp=Number of ten year periods in strata rotation
 SA=Strata acres within an analysis area
 AA=Total analysis area acres

The ending inventory for an individual analysis area based on the prescription allocation is:

$$EI_A = \sum_{p=1}^1 (EI_p) (P_A)$$

where:

A=Analysis area 1,2,3,1 with regenerated prescription(s) allocated within the FORPLAN solution
 P=Regenerated prescription 1,2,1 allocated to analysis area
 EI=Ending inventory coefficient for the regenerated prescription
 PA=Acres allocated to regeneration prescription

FORPLAN uses a similar equation to calculate the Forestwide [EI].

Culmination of Mean Annual Increment (CMAI) as per NFMA 219.16(a)(111), requires that in "... accordance with the established standards, 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."

Rotation ages applied in the RMYLD model resulted in the seed cut and final removal cut of the shelterwood system occurring at or slightly beyond the culmination of mean annual increment (CMAI). The FORPLAN yield coefficients for timber were derived from the results of RMYLD and the SALT model. The CMAI requirements are, therefore, incorporated within FORPLAN yield coefficients and are not achieved through application of specific constraints to the model.

Prescription Controls were applied to FORPLAN in certain situations to ensure that the model assigned only specific prescriptions to certain analysis areas or allowed only certain prescriptions to be available for consideration. The purpose was to achieve a desired management practice and/or intensity of management. Prescription controls limit which prescriptions will be available and which analysis areas will be affected by which prescriptions.

Departures from NDY are defined as alternatives which deviate from the principle of nondeclining even-flow through a planned decrease or increase in the timber sale and harvest schedule at some time in the future. The purpose of analyzing departures is to investigate the possibility that net public benefits can be maximized through a departure from the base sale schedule of an original alternative. This rationale is based on regulations found in NFMA section 36 CFR 219.16(3).

Constraint sets, as developed by the ID Team, were determined to be the most cost efficient method of achieving the goals and objectives of the alternatives and benchmarks.

Perpetual timber harvest (EI), nondeclining yield, long term sustained yield capacity, and culmination of mean annual increment are common to all alternatives. Culmination of mean annual increment, while common to all alternatives, was actually built into the yield coefficients through RMYLD. Minimum management requirements also are built into the prescriptions. A more complete discussion of the minimum management requirements can be found in the technical report on Minimum Management Requirements located at the Supervisor's Office.

TABLE 96. Model Constraints and Prescription Controls for Alternatives

ALTERNATIVE: Proposed Action-Run 1		OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4	5	
Nondeclining Yield	MCF/Year							
Ending Inventory	MCF/Year							
Long-Run Sustained Yield Link	MCF/Year							
Culmination Mean Annual Increment								
Minimum Mgmt. Requirement								
Budget	M\$	LE	7383	9408	9408	9408	9408	
Acre Per Acre Whole Forest	Acres/Period	GE	3342890					
		LE	3342891					
Acre Per Acre Admin. Sites	Acres/Period	GE	25					
		LE	26					

Discussion: Nondeclining yield [36 CFR 219.16(a)(1)], ending inventory [36 CFR 219.16(a)(2)(iv)], and long-run sustained yield link [36 CFR 219.16(a)(1)] comply with legal requirements. Nondeclining yield applies to all time periods, while ending inventory and long-run sustained yield link apply to period eight. 36 CFR 219.16(a)(2)(iii) requires that all even-aged stands scheduled to be harvested during the planning period generally will have reached the culmination of mean annual increment of growth.

This was the initial run in the development of the Proposed Action Alternative. The Maximum PNW benchmark with assigned values was used as the basis for the run. The budget constraint was included as per the direction of the R-3 Supplement Number 6. The constraints on "Whole Forest" and "Administrative Sites" were intended to insure that proper Administrative Site and Forestwide costs were applied.

This run did not result in a satisfactory solution. Because of the budget constraint in the first decade and the high wildlife benefit values, many of the analysis areas went to Max. Wildlife with timber going mostly to current. This solution did not provide for levels of range and timber outputs needed to maintain local economies. As a result it would have created more issues than it would resolve. The PNW for the run was \$457,777,000.

ALTERNATIVE: Proposed Action-Run 2 Incremental Changes							
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)							
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4	5
CONSTRAINTS BY PERIOD							
Constraints the same as above							

In addition to the constraints above, all maximum wildlife prescriptions were deleted from the model.

Discussion: Because of the allocation imbalance that resulted when maximum wildlife prescriptions were included in the model, maximum wildlife prescriptions were eliminated from consideration in this run. This was done so that wildlife concerns could be addressed through integration of all resources on the Forest and not be addressed by maximizing wildlife considerations in limited areas and providing for only minimal management on the rest of the Forest. All other constraints were the same. The PNW for this run was \$401,169,000.

ALTERNATIVE: Proposed Action-Run 3 Incremental Changes							
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)							
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4	5
CONSTRAINTS BY PERIOD							
Permitted AUMs	AUMs/Year	GE					350000
		LE					500000
Struc. Range Improvements	M\$/Year	GE					30
		LE					70
Acre Per Acre Fort Bayard Area	Acres/Period	EQ	1				
Acre Per Acre Dev. Rec. Sites	Acres/Period	EQ	1				
Budget	M\$/Year	LE	7583	9608	9608	9608	9608

Discussion: Additional constraints added to this alternative run included the lower limit constraint on permitted AUMs. This was added to respond to Issue 2 and became necessary because of the relatively low benefit value for permitted use outputs. Without the constraint, the desired level of output for grazing would not be reached. To insure the structural improvements necessary to meet the objectives of the alternatives as well as to support the level of AUMs desired were not delayed until the second decade, a lower limit constraint was placed on dollars allocated to structural range improvements.

Table 96 (Continued)

Further analysis indicated that forest fire protection dollars contained approximately \$200,000 more than was needed or the level of protection required by this alternative; therefore, Activity 350 was reduced \$200,000 which allowed for an increase in expenditures in other resource areas. A limitation of the FORPLAN model required that the budget be increased by \$200,000 to account for the constraint that decreases forest fire protection dollars. The actual total Forest budget remained at \$7,383,000 and \$9,409,000 as constrained in the first two runs. Acre per acre constraints were used for the Fort Bayard Site and developed recreation. The purpose for this was to force the Fort Bayard site to go to current management and developed recreation to go to intermediate management in order to meet the objectives of the alternative. These areas require special constraints since they are managed as separate analysis areas in the model.

Sawtimber was reduced from 40.9 MMBF in run two to 33.9 MMBF in this run. A majority of the sawtimber harvested was taken from mixed conifer stands, and about one half of the volume harvested was logged using the cable method. Over 500 acres of 2000 foot and greater slope lengths were scheduled for harvest in the first decade. Because of existing market conditions and available logging equipment, this was not acceptable on a proposed action alternative. The PNV for the run was \$399,146,000.

ALTERNATIVE: Proposed Action-Run 4 Incremental Changes							
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)							
INCREMENTAL	UNITS OF		CONSTRAINTS BY PERIOD				
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
Vol. Cable Logged	MBF/Year	GE	0	0			
		LE	8500	20000			
Vol. Mix Conf. Logged	MBF/Year	GE	0	0			
		LE	15000	40000			
Cabl. Logged 2000Ft.+ Slopes	Acres/Year	GE	0				
		LE	1				

Discussion: The constraints added to this variation of the proposed action alternative deal specifically with location and type of timber harvested. The volume of timber logged by the cable method was constrained in the first and second decades based on the level of expected ability of the timber industry to harvest using the cable logging method. The volume of mixed conifer available for harvest was constrained to insure a feasible mix of sawtimber in the first two decades. The acres of 2000 foot and greater slope lengths were constrained unavailable in the first decade since technology would not be available to harvest long and steep slopes before the end of the first decade. This was accomplished with a constraint that allowed no more than one acre to be allocated to cable logging of 2000 foot or greater slope lengths.

The constraint to restrict cable logging on 2000 foot and longer slope lengths did not work because of the way in which it was implemented in FORPLAN. Total volume of timber logged using the cable method was at the constrained levels of 8.5 MMBF and 20.0 MMBF for the first and second decades respectively. The mix of sawtimber between mixed conifer and Ponderosa pine evened out as a result of the constraint of mixed conifer sawtimber. Total sawtimber was further reduced to 31.3 MMBF in the first decade. This is a result of increased costs associated with harvesting areas with less volume per acre (Ponderosa pine). The total PNV for the run was \$396,736,000. Even though the greater than 2,000 foot cable constraint did not work, the effect of this on PNV was not significant. This run therefore, did, show the tradeoffs of the cable and species mixture constraints.

ALTERNATIVE: Proposed Action-Run 5 Incremental Changes							
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)							
INCREMENTAL	UNITS OF	CONSTRAINTS BY PERIOD					
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
Cabl. Logged 2000Ft.+ Slopes	Acres/Year	GE	1				
		LE	2				

Table 96 (Continued)

Discussion: The error on 2000 foot and greater slope length constraint was corrected in this run. To address Issue 4, total wilderness dollars were increased to \$120,000 in the first decade with a five percent increase per period over the planning horizon; the dispersed recreation budget was increased five percent per period over the planning horizon after the first decade; and the developed recreation budget was increased five percent per time period over the planning horizon after the first decade.

The increase in dollars going to recreation forced total sawtimber to drop to approximately 30 MMBF in the decade. The total PNV for the run was \$393,439,000.

ALTERNATIVE: Proposed Action-Run 6 Incremental Changes							
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)							
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Sawtimber	MBF/Year	GE	1				
		LE	31000				
Permitted AUMs	AUMs/Year	GE					350000
		LE					350005
Vol. Cable	MBF/Year	GE	5000	0			
Logged		LE	8500	20000			
All Wildlife	M\$/Year	GE	298				
Costs		LE	300				

Discussion: At this point in the analysis the Management Team felt that range, recreation, and wildlife outputs and costs were at a level that approximately balanced resolution of issues with feasible budgets. Permitted AUMs, and wildlife costs were therefore locked in with constraints and recreation costs were locked in with cost coefficients. The budget constraint was released so the alternative could be fine tuned. The lower limit constraint on the volume logged using cable methods was added (5000 MBF) in the first decade to reflect the Regional commitment to provide cable volume on the Forest. A sawtimber constraint of 31 MMBF was added so that sawtimber volume would go to approximately the current level. Since most of the resource outputs were constrained to a desired level, it was assumed that the budget would not increase to an unreasonable level. In addition to the above mentioned constraints, all LTMA's scheduled for harvest in the first four years of the Five Year Timber Action Plan were constrained to allow the specified acreage to be available for harvest. These constraints were included to insure that the sales already scheduled for harvest were included in the analysis. (The complete set of LTMA constraints are available for review at the Supervisor's Office in Silver City, New Mexico.) The constraint on the Fort Bayard site was changed to a special management emphasis constraint unique to the existing conditions at the Fort Bayard site.

The model chose as much timber as the constraint would allow. This is due to the positive benefits associated with timber harvesting. As a result of the management team meeting held to discuss this run, it was determined that some of the timber constraints needed revising. Some of the sales scheduled for harvest in the first decade were taking too much volume per acre for single removal harvests. Reentering a stand too soon following a sale also required that an adjustment be made. The PNV for run six was \$389,699,000.

ALTERNATIVE: Proposed Action-Run 7 Incremental Changes							
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)							
INCREMENTAL	UNITS OF	CONSTRAINTS BY PERIOD					
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
No Additional Forestwide Constraints Were Implemented							

Table 96 (Continued)

Discussion: Timing option (see Gila National Forest Outputs Technical Report) constraints were placed on many of the LTMA's to provide for better age-class distribution and to provide for better implementation of integrated management of resources. Several additional LTMA constraints were added to prevent the over-harvest of an area or to postpone the sale of a recently harvested area. Beginning with this run, the FORPLAN "Generate Prescriptions" option was used to select only those prescriptions that would meet the objectives of the alternative and to insure the management concerns identified were addressed. A complete list of LTMA constraints is available for review at the Supervisor's Office at Silver City.

Some of the timing options selected in this run do not allow for cable logging until later decades, therefore, the number of acres logged using the cable logging method declined in the first decade and increased in the second and later decades. This reduction in available acres did not affect the Regional commitment to provide a specific volume to be harvested using the cable method. The total PNV for the run was \$388,870,000.

ALTERNATIVE: Proposed Action-Run 8 Incremental Changes						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
CONSTRAINTS BY PERIOD						
			5			
No Additional Forestwide Constraints Were Implemented						

Discussion: Run eight was intended to fine-tune the LTMA constraints. Several LTMA's were constrained to specific timing options and specific prescriptions. The changes were made based on discussion with the various district timber staff officers on the Forest. Due to the long list of very specific constraints implemented, they were not reproduced in this appendix. A complete documented list of the constraints by district is available for review at the Supervisor's Office in Silver City.

The results of this run were very close to the desired results for the proposed action alternative; however, the total volume of sawtimber did not exceed the current level and did not help resolve Issue 1. The distribution of sawtimber volume by district was determined to be acceptable. The mix of cable and noncable was within an acceptable level as well. A review of the distribution of emphasis levels determined that the goals and objectives were very close to being met. Several subsequent runs were made in an attempt to reach this level of scheduling and allocation. The PNV for this run was \$378,681,000.

ALTERNATIVE: Proposed Action-Run 9 Incremental Changes						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4
CONSTRAINTS BY PERIOD						
			5			
Sawtimber	MBF/Year	GE	35000			
		LE	36000			

Discussion: To address Issue 1, the volume of sawtimber was constrained to 35000 MBF for this variation of the proposed action alternative. The decision was made that in order to accurately meet the goals and objectives set by the management team, 35000 MBF of sawtimber would be necessary. With the constraints in place, the adjusted total Forest budget is within the budget limit set by the Regional Office to insure feasibility of the alternatives. The total PNV for the run was \$376,953,000.

This run had been accepted as the final variation of the Proposed Action Alternative; however, in response to public concerns on the DEIS, several changes were made to the alternatives considered in detail. The sequence of runs preceding the DEIS version of the Proposed Action Alternative are described below.

Table 96 (Continued)

ALTERNATIVE: Final Proposed Action-Run 1					
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)					
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	CONSTRAINTS BY PERIOD 3 4 5
Nondeclining Yield	MCF/Year				
Ending Inventory	MCF/Year				
Long-Run Sustained Yield Link	MCF/Year				
Culmination Mean Annual Increment					
Minimum Mgmt. Requirement					
Acre Per Acre Whole Forest	Acres/Period	GE LE	3342890 3342891		
Acre Per Acre Admin. Sites	Acres/Period	GE LE	25 26		

Discussion: Nondeclining yield [36 CFR 219.16(a)(1)], ending inventory [36 CFR 219.16(a)(2)(iv)], and long-run sustained yield link [36 CFR 219.16(a)(1)] comply with legal requirements. Nondeclining yield applies to all time periods, while ending inventory and long-run sustained yield link apply to period eight. 36 CFR 219.16(a)(2)(ii) requires that all even-aged stands scheduled to be harvested during the planning period generally will have reached the culmination of mean annual increment of growth.

The basis for this run is the Maximum PNV with Assigned Values Benchmark. The primary difference between this run and the original Max PNV Assigned Benchmark is the benefit value assigned to sawtimber (\$86.35/MBF for mixed conifer and \$104.81 for ponderosa pine). The constraints on "Forestwide" and Administrative Sites were added to insure that proper Administrative Site and Forestwide costs were applied.

This run did not result in a satisfactory solution. Because of the high wildlife benefit values, most of the analysis areas went to maximum wildlife prescriptions. The solution did not provide for suitable levels of commodity outputs to meet the demand of the local economies. The PNV for this run was \$350,275,000.

ALTERNATIVE: Final Proposed Action-Run 2 Incremental Changes					
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)					
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	CONSTRAINTS BY PERIOD 3 4 5
Acre Per Acre Ft. Bayard Site	Acres/Period	EQ	1		
Budget	M\$/Year	LE	20000		

Discussion: The basis for this run is the final step of the original Proposed Action Alternative (Run 9). The Amount/\$ constraints were deleted and only the Forestwide, Administrative Site, and the Ft. Bayard Site Amount/\$ constraints remained. An upper limit budget constraint was included to allow for convenience should supplemental runs be required.

Table 96 (Continued)

In addition to the Amount/\$ constraints, the run was constrained to assign only certain prescriptions--excluding the maximum wildlife prescription, and the maximum range prescription on areas of the Forest except suitable timber areas. This was accomplished using the "Generate Prescriptions" option in FORPLAN. The intent was to ensure that only those prescriptions that would meet the objectives of the alternative were available. Several additional constraints were added to adjust dollar allocations to: fire protection, road operation and maintenance, facilities, and road construction--fixed costs.

This run did not result in a satisfactory solution. Again, commodity outputs were insufficiently low. The PNV for this run was \$258,484,000.

ALTERNATIVE: Final Proposed Action-Run 3 Incremental Changes						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4 5
Vol. Cable Logged	MBF/Year	GE	0	0		
		LE	8500	20000		
Vol. Mixed Conif. Logged	MBF/Year	GE	0	0		
		LE	15000	40000		
Cable Logged 2000 Ft.+ Slopes	Acres/Year	GE	0			
		LE	1			
Permitted AUMs	AUMs/Year	GE				350000
		LE				350005
Structural Range Improvements	M\$/Year	GE	30			
		LE	70			

Discussion: Additional constraints added to this alternative run included the upper limit constraint on the volume of timber available to be harvested using the cable logging method based on the level of expected ability of the timber industry to harvest using the cable method. The volume of mixed conifer available for harvest was constrained to insure a feasible mix of sawtimber. The acres of 2000 foot and greater slope lengths were constrained unavailable in the first decade since technology would not be available to harvest long and steep slopes before the end of the first decade. Permitted AUMs were locked in at a level that approximately balanced resolution of issues with feasible budgets. The relatively low benefit value for permitted use outputs would otherwise limit the model from allocating the desired level of output for grazing. To ensure the structural improvements necessary to meet the objectives of the alternative as well as to support the level of AUMs desired were not delayed until the second decade, a lower limit constraint was placed on dollars allocated to structural range improvements.

In addition to the constraints identified above, several additional constraints were added to specific LTMA's to prevent the over-harvest of some areas or to postpone the sale of recently harvested areas. Timing option constraints were placed on some of the LTMA's to provide for better age-class distribution and to provide for better implementation of integrated management of resources. The maximum wildlife prescription was made available for the suitable timber areas on the Forest.

The level of sawtimber remained at an unacceptably low level. In addition, several of the areas where investments have been made in preparation for timber sales, and identified on the ten year Timber Sale Plan did not come into solution in this run. The PNV for the run was \$326,308,000.

ALTERNATIVE: Final Proposed Action-Run 4 Incremental Changes						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4 5
All LTMA's scheduled for harvest in the first three years of the Timber Action Plan were constrained to come into solution.						

Table 96 (Continued)

Discussion: Some of the timing options selected in this run did not allow for cable logging until later decades, therefore, the volume of timber logged using the cable method was below that level identified as a regional commitment. The total PNV for the run was \$308,746,000.

ALTERNATIVE: Final Proposed Action-Run 5 Incremental Changes						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	CONSTRAINTS BY PERIOD	
					3	4 5
Volume Cable Logged	MBF/Year	GE	5000	5000		
		LE	8500	20000		

Discussion: The volume of sawtimber logged using cable systems was constrained to a level equivalent to the volume identified as a regional commitment to harvested using the cable system.

This run did not result in a satisfactory solution. Because of the allocation imbalance (maximum wildlife was available for the suitable timber acres), too much of the Forest was allocated to the maximum wildlife prescription. This was done so that wildlife concerns could be addressed through integration of all resources on the Forest and not be addressed by maximizing wildlife considerations in limited areas and providing for only minimal management on the rest of the Forest. The PNV for this run was \$305,884,000.

ALTERNATIVE: Final Proposed Action-Run 6 Incremental Changes						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV)						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	CONSTRAINTS BY PERIOD	
					3	4 5
Volume Cable Logged	MBF/Year	GE	5000	5000		
		LE	20000	20000		
Sawtimber	MBF/Year	GE	30000			
		LE	35000			
Max. Wildlife	Amount/Year	GE	0			
		LE	1			

Discussion: In an attempt to evaluate where and how much of the total constrained sawtimber volume (30,000 MBF in this run) would be logged using cable systems, the upper limit constraint on cable volume was relaxed. The result was that nearly one third of the total constrained volume came from steep slope areas requiring cable logging methods. This suggests that given the opportunity, the model will select steep slope areas as more economically efficient than 0 to 40 percent slopes in some cases. This is because of the volume per acre on some of the steep slopes on the Forest. This also indicates that steep slope logging can be accomplished without irreversible consequences to the environment.

In an attempt to achieve a more suitable balance of all resource activities across the entire Forest, maximum wildlife prescriptions were again eliminated. This run did not result in a satisfactory solution because of the amount of sawtimber cable harvested sawtimber. The PNV for this run was \$243,025,000.

Table 96 (Continued)

ALTERNATIVE: Final Proposed Action-Run 7 Incremental Changes							
OBJECTIVE FUNCTION: 1) Minimize cable for 3 decades. 2) Maximize Present Net Value (PNV)							
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Volume Cable	MBF/Year	GE	5000	5000			
Logged		LE	5050	5050			
Volume Cable	MBF/Year	GE	0				
Logged--Luna		LE	1050				
Sawtimber	MBF/Year	GE	0				
Logged--Luna		LE	6000				

Discussion: In an effort to effectively plan and manage cable volume, an Amount/\$ constraint was placed on sawtimber logged using cable methods. In addition, a second objective function was added to minimize cable volume for the first three decades. This was done to meet the objectives of the other constraints in the model (i.e. specific LTMA constraints on 0 to 40 percent slope areas and the requirement that two removal harvests be accomplished on some areas.

Total sawtimber volume was constrained at 1050 MBF maximum, on the Luna District. In addition, total sawtimber volume was constrained not to exceed 6000 MBF in the first decade on the Luna District. This constraint was included to control overcutting the Luna District in the first decade. Several other LTMA constraints were adjusted as per the Timber Staff Officer's instruction to more accurately reflect the volume harvested and acres entered as identified in the ten year Timber Sale Program. This was accomplished by constraining some areas to specific timing options, or eliminating one removal harvests in some areas. The PNV for this run was \$234,019,000.

ALTERNATIVE: Final Proposed Action-Run 8 Incremental Changes							
OBJECTIVE FUNCTION: 1) Minimize cable for 3 decades. 2) Maximize Present Net Value (PNV)							
	UNITS OF		CONSTRAINTS BY PERIOD				
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
No additional forestwide constraints were implemented to this run.							

Discussion: In an effort to accurately coordinate this alternative with the activities scheduled by the ten year Timber Sale Program, several additional adjustments were made to this run. One LTMA each on the Black Range and the Luna Districts was constrained to harvest a specific volume of timber because of investments that had already been committed to sales in these areas. One LTMA each on the Luna and the Glenwood Districts was constrained as unavailable because it was determined that no timber should be scheduled to be removed from these areas during the first decade. One area on the Reserve District was constrained to reduce the total available volume as a result of a timber sale that was scheduled to sell prior to the implementation of the Plan. An area on the Black Range District was constrained to allow a two removal option only. Two areas on the Quemado District were constrained to allow only a single removal option and no cable logging until the third decade. Two areas on the Quemado District were constrained to be harvested in the first decade that were previously unavailable. The area was part of a sale that did not sell, and will be reoffered during the first decade.

The results of this run were very close to what was considered by the Forest Management Team as the Proposed Action Alternative. It was decided that another run was needed in an effort to fine tune the allocation of resources, primarily range, timber, and wildlife. The PNV for this run was \$239,841,000.

Table 96 (Continued)

ALTERNATIVE: Final Proposed Action-Run 9 Incremental Changes
 OBJECTIVE FUNCTION: 1) Minimize Cable For 3 decades. 2) Maximize Wildlife RVDs in 1st Decade.
 3) Maximize Present Net Value (PNV).

CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
No Additional Forestwide Constraints Were Implemented							

Discussion: Within the existing constraints, including the elimination of the maximum wildlife constraints and the maximum range constraints on certain areas of the Forest, and the requirement that a specific level of range AUMs be provided, a third objective function was added to this run. This was to maximize wildlife RVDs in the first decade within the bounds of all existing constraints. The results of this run was the most successful alternative, overall, at addressing the issues and concerns. For specific details concerning the extent to which this Proposed Action Alternative responds to the issues, please refer to the "Issue Resolution" section of Chapter 2 of the Environmental Impact Statement. With the constraints in place, the adjusted total Forest budget is within the budget limit set by the Regional Office to insure feasibility of the alternative. The total PNV for this run was \$240,236,000.

ALTERNATIVE: Current (No Action)		CONSTRAINTS BY PERIOD						
OBJECTIVE FUNCTION: Maximize PNV								
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4	5	
Nondeclining Yield	MCF/Year							
Ending Inventory	MCF/Year							
Long-Run Sustained Yield	MCF/Year							
Culmination Mean Annual Increment								
Minimum Mgmt. Requirement								
Floor/Ceiling Constraint								
Sawtimber	MBF/Year	GE	31000					
		LE	40000					
Net March Tmb Vol	MCF/Year	GE	1					
		LE	400000					
Budget	M\$	LE	7804	7804	8194	8604	9034	

The discussion concerning the nondeclining yield (NDY), ending inventory (EI), long-run sustained yield link (LRSY-L), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered under the Proposed Action Alternative section, variation one of this table.

Only the Current prescriptions were available for selection in this alternative. Wilderness Study Areas were not available for nonwilderness activities. Net Merchantable Timber Volume harvested in the first decade was to be no greater than the quantity specified in the current Timber Management Plan. A constraint was included at a level high enough (400,000 MBF/Year) to insure it would not be binding. The reason for the selected range of the constraint was to allow the flexibility of making subsequent runs

Table 96 (Continued)

should the need arise. Budget constraints for the first two decades were constrained as per Regional direction (R-3 Supplement No. 6). For decades three through five, a five percent increase per decade was applied. The budget constraint includes all funds expended by the Forest except purchaser credit and election, allocated funds from other agencies, human resource programs, and range betterment funds held in the Regional Office.

The sawtimber floor constraint was binding at 31000 MBF; as was the budget constraint for the first three decades (\$7,804,000; \$7,804,000; and \$8,194,000 respectively). Only one variation of this run was made. This is the same run as the Current Benchmark displayed in Table 89. The PNV for the run was \$192,323,000.

ALTERNATIVE: RPA		OBJECTIVE FUNCTION: (1)Maximize Game and Non-game Habitat Improvement Costs in the First Decade; (2)Minimize Costs; (3)Maximize PNV of Outputs with Assigned Values					
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Nondeclining Yield	MCF/Year						
Ending Inventory	MCF/Year						
Long-Run Sustained Yield	MCF/Year						
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							
Game/Nongame Habitat Improvement	MS/Year	GE LE					1 402.9
Acre Per Acre Disp.& Wilderness Rec.	Acre/Period	EQ CR	15				
Acre Per Acre Develop. Rec.	Acre/Period	EQ PX	1				
Permitted AUMs	AUMs/Year	GE LE					354000 365000
All Timber Products	MBF/Year	GE LE	45000 50000				56000 61000
P-J Fuelwood Sold	MBF/Year	GE LE	1 8000				
Acre Per Acre Forestwide Area	Acre/Period	GE LE	3342890 3342891				
Acre Per Acre Admin. Sites	Acre/Period	GE LE	25 26				
Volume Cable Logged	MBF/Year	GE LE	5000 8500	0 20000			
Vol. Mixed Conifer Logged	MBF/Year	GE LE	0 15000				
Cable Logged 2000 Ft.+ Slopes	MBF/Year	GE LE	1 2				

Table 96 (Continued)

Discussion: The discussion concerning the nondeclining yield (NDY), ending inventory (EI), long-run sustained yield link (LRSY-L), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered under the Proposed Action Alternative section, variation one of this table.

This alternative was developed to assess the ability of the Forest to produce the outputs assigned in the Regional Guide at the lowest possible cost. The constraints displayed above identify the level of outputs that would come closest to the targets. The game and nongame habitat improvement constraint provides the acre equivalent of habitat improvement indicated as a target by RPA. The constraint on fuelwood was applied to keep the model from accomplishing the timber target with an unrealistic level of fuelwood. All of the constraints applied to LTMA's and prescriptions on the Proposed Action Alternative were applied to the RPA alternative. Through review of recreation costs, it was determined that the costs needed to be increased to a level that would meet the objectives of the alternative. In this alternative, total wilderness dollars were increased to \$30,000 in the first decade with a five percent increase per period over the planning horizon; the dispersed recreation budget was increased five percent per period over the planning horizon after the first decade; and the developed recreation budget was increased five percent per time period over the planning horizon after the first decade.

This combination of constraints and objective functions resulted in an alternative that comes as close as possible to meeting the RPA targets. The developed recreation target cannot be met without building an unrealistic number of additional campgrounds on the Forest. The water yield target was unattainable. The wildlife, range, and timber targets were accomplished. Target levels were not assigned for support activities such as reforestation and TSI. The PNV for the alternative was \$194,102,000 at an unconstrained budget of \$9,230,000 a year for the first decade.

ALTERNATIVE: Maximum Commodity Emphasis-Run 1							
OBJECTIVE FUNCTION: (1) Maximize Commodity Outputs; (2) Maximize PNV with Assigned Values							
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Nondeclining Yield	MCF/Year						
Ending Inventory	MCF/Year						
Long-Run Sustained Yield	MCF/Year						
Culmination Mean Annual Increment							
Minimum Mgmt. Requirement							
Acre Per Acre Forestwide Area	Acre/Period	GE	3342890				
		LE	3342891				
Acre Per Acre Admin. Sites	Acre/Period	GE	25				
		LE	26				
Budget	M\$/Year	LE	7711	9408	9408	9408	9408

Discussion: The discussion concerning the nondeclining yield (NDY), ending inventory (EI), long-run sustained yield link (LRSY-L), culmination mean annual increment (CMAI), and minimum management requirements (MMR) constraints is covered under the Proposed Action Alternative section, variation one of this table.

The constraint on the Forestwide analysis area and Administrative Sites was designed to force the model to choose the Maximum Range, Maximum Timber, and Low Wildlife prescription for these areas. The intent of the alternative was to satisfy the requirement to develop an alternative that emphasizes market opportunities. Emphasis is

Table 96 (Continued)

placed on those outputs that have a market value. Management of other resources are at economically and environmentally feasible levels consistent with the emphasis on market oriented outputs.

This run did not result in a satisfactory solution. Because of the budget constraint in the first decade and the fact that timber has a substantially higher benefit value than most of the other market outputs, the model maximized timber over the first five decades. Most of the analysis areas went to low for the other market output resources. The run also provided low levels of timber in the first decade, resulting in more timber scheduled for harvest in the next four decades. This run did not meet the objectives of an overall high commodity emphasis alternative and did not make a substantial contribution toward the resolution of Issues 1 and 2. The PNV for this run was \$226,859,000.

ALTERNATIVE: Maximum Commodity Emphasis-Run 2						
OBJECTIVE FUNCTION: (1) Maximize Commodity Outputs; (2) Maximize PNV with Assigned Values						
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4 5
Acre Per Acre Ft. Bayard Site	Acre/Period	EQ	1			
Permitted AUMs	AUMs/Year	GE LE				380000 500000
Sawtimber	MBF/Year	GE LE	25000 70000			

Discussion: The constraint on the Fort Bayard site was applied to require the area to go to a maximum commodities emphasis in an effort to be compatible with the objective of the alternative. Because of the low benefit values associated with grazing AUMs, the model was constrained to require at least 380,000 AUMs of permitted grazing by the fifth decade. This is the approximate permitted numbers presently being grazed on the Forest and the intent was to be back to at least this level by the fifth decade under a commodity emphasis alternative. As a result of the constraint placed on grazing as well as the constrained budget in the first decade, it was necessary to constrain the model to take at least 25 MMBF of sawtimber in the first decade.

The run did not produce a satisfactory solution. The long-term commodity outputs were relatively high but the first decade timber outputs were low. Only 25 MMBF (the lower limit constraint) of timber was harvested in the first decade. This did little to resolve the timber issue in the first decade. Range outputs were determined by the lower limit constraint in the fifth period. Overall, the run did not produce the level of commodity outputs expected from a commodity alternative. The PNV for this run was \$209,875,000.

ALTERNATIVE: Maximum Commodity Emphasis-Run 3
 OBJECTIVE FUNCTION: (1) Maximize Sawtimber for First Decade; (2) Maximize Commodity Outputs;
 (3) Maximize PNV with Assigned Values
 No Variation in the Constraints Used From Run 2

Discussion: To overcome the low first decade timber volumes, this run added an objective function to maximize sawtimber in the first decade. The run satisfied the objectives for a commodity emphasis alternative except for fuelwood outputs. Because of the budget constraint in the first decade and the relatively low PNV of the fuelwood prescriptions on accessible and potentially accessible areas, many of the fuelwood areas went too low. This resulted in a level about 50 percent below current and was not acceptable for a commodity emphasis alternative. The fuelwood portion of Issue 1 was not addressed. The PNV for the run was \$155,829,500.

Table 96 (Continued)

ALTERNATIVE: Maximum Commodity Emphasis-Run 4						
OBJECTIVE FUNCTION: (1) Maximize Sawtimber for First Decade; (2) Maximize Commodity Outputs;						
(3) Maximize PNV with Assigned Values						
INCREMENTAL	UNITS OF	CONSTRAINTS BY PERIOD				
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4 5
Fuelwood	MBF/Period	GE	30000			
		LE	70000			

Discussion: With the constraint added to fuelwood, run four provided a commodity emphasis alternative ready for the Management Team review. It provided for the production of 380,000 permitted AUMs by the fifth decade, 42.6 MMBF of timber in the first decade, and 70,000 MBF of fuelwood in the first decade. The PNV for this run was \$153,323,000.

As a result of the Management Team meeting, it was discovered that the GA budget and the FA&O Structural Construction/Reconstruction was funded higher than necessary to successfully implement the commodity emphasis alternative. To correct this problem, \$200,000 per year was taken from the GA budget and \$50,000 per year was taken from the FA&O Structural Construction/Reconstruction budget and made available for other commodity outputs. This resulted in higher timber outputs (46.4 MMBF in first decade) and a higher PNV. The PNV for this run was \$293,267,000.

The results of this run was presented to the Regional Office Review Team. It was recommended that a second commodity alternative was needed that specifically maximized timber outputs. To assist in preparing an acceptable level of timber output, an increase in the total Forest budget was authorized. The following two alternative descriptions represent: (1) Alternative C--Range Commodity Emphasis Alternative, and (2) Alternative D--Timber Commodity Emphasis Alternative. Perpetual Timber Harvest, Nondeclining Yield, Long Run Sustained Yield, Culmination of Mean Annual Increment, and Minimum Management Requirements were included in both runs.

ALTERNATIVE: Range Commodity Emphasis-Run 5							
OBJECTIVE FUNCTION: (1) Maximize Sawtimber for First Decade; (2) Maximize Commodity Outputs; (3) Maximize PNV with Assigned Values							
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Acre Per Acre Forestwide Area	Acre/Period	GE	3342890				
		LE	3342891				
Acre Per Acre Admin. Sites	Acre/Period	GE	25				
		LE	26				
Permitted AUMs	AUMs/Year	GE					380000
		LE					500000
Sawtimber	MBF/Year	GE	25000				
		LE	70000				
Budget	M\$/Year	LE	7711				
Fuelwood P-J	MBF/Period	GE	30000				
		LE	70000				
Structural Range Improvements	M\$/Year	GE	70				
		LE	100				

Discussion: The budget constraint was adjusted in the model to account for a limitation in FORPLAN. The total Forest budget remains at \$7,711,000 as constrained by R-3 Supplement Number 6. Because of the first objective function to maximize timber for the first time period, the model scheduled 42.6 MMBF of sawtimber for harvest in the first period. Permitted AUMs reached 380,000 by the fifth period. Fuelwood (P-J) was binding at 70,000 MBF per

Table 96 (Continued)

period and structural range improvements were binding at \$70,000 per period. This alternative addresses the range issue by providing for a fifth decade permitted level approximately equal to the current level and helps resolve the timber issue by providing more sawtimber and fuelwood. The PNV for this run was \$160,955,000.

ALTERNATIVE: Range Commodity Emphasis-Run 6						
OBJECTIVE FUNCTION: (1) Maximize Sawtimber for First Decade; (2)Maximize Commodity Outputs;						
(3)Maximize PNV with Assigned Values						
INCREMENTAL	UNITS OF	CONSTRAINTS BY PERIOD				
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4 5
Permitted AUMs	AUMs/Year	GE			400000	
		LE			500000	

Discussion: The Range Commodity Emphasis Alternative was rerun between the draft and final Plan with an adjustment made to the permitted AUMs constraint. The constraint was adjusted from the original lower limit of 380,000 AUMs to the revised level of 400,000 AUMs. This was done to provide an alternative considered in detail with a level of permitted AUMs that more accurately represented an increased AUM output level. Prior to this, no alternative evaluated for comparison an alternative that provided for a level of permitted AUMs beyond that level currently provided on the Forest. It must be noted however, the current level of permitted AUMs would decline over time in the Current Alternative. In this alternative, the level of permitted AUMs would begin at a level below the proposed third period level, but with required funding, would increase to 400,000 AUMs by the third period. The PNV for this alternative was \$146,540,000.

ALTERNATIVE: Timber Commodity Emphasis-Run 7							
OBJECTIVE FUNCTION: (1) Maximize Sawtimber for First Decade; (2) Maximize Commodity Outputs;							
(3) Maximize PNV with Assigned Values							
INCREMENTAL CONSTRAINTS	UNITS OF MEASURE	OPERATOR	CONSTRAINTS BY PERIOD				
			1	2	3	4	5
Acre Per Acre Forestwide Area	Acre/Period	GE	3342890				
		LE	3342891				
Acre Per Acre Admin. Sites	Acre/Period	GE	25				
Acre Per Acre Ft. Bayard	Acre/Period	EQ	1				
Permitted AUMs	AUMs/Year	GE					340000
		LE					350000
Sawtimber	MBF/Year	GE	25000				
		LE	70000				
Budget	M\$/Year	LE	7900				
Fuelwood P-J	MBF/Period	GE	30000				
		LE	70000				
Structural Range Improvements	M\$/Year	GE	70				
		LE	100				

Discussion: This alternative included a constraint that required the Fort Bayard site to go a maximum commodities prescription. This was the final variation of the timber commodities emphasis alternative. The run scheduled 53.1 MMBF of sawtimber per year for harvest in the first time period. This constraint, along with a reduction in permitted AUMs required by the fifth period, was included to determine the net effect on sawtimber. This alternative also required an adjustment to the FORPLAN model to allow for the changes made to GA and F&O Structural Construction and Reconstruction accounts; however, the total available dollars increased only to the level prescribed by Regional

Table 96 (Continued)

direction. The total PNW increased from the previous run to \$304,127,000. The increase is due to the additional dollars available in this run and the reduction in required permitted AUMs. Benefit values for timber outputs are higher than for range outputs, therefore, the result will be an increase in PNW (\$166,141,000).

ALTERNATIVE: Range Wildlife Conflict Resolution-Run 1						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV) with Assigned Values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4 5
Nondeclining Yield	MCF/Year					
Ending Inventory	MCF/Year					
Long-Run Sustained Yield Link	MCF/Year					
Culmination Mean Annual Increment						
Minimum Mgmt. Requirement						
Budget	M\$	LE	7711			
Acre Per Acre	Acres/Period	GE	3342890			
Whole Forest		LE	3342891			
ALTERNATIVE: Range Wildlife Conflict Resolution-Run 1						
OBJECTIVE FUNCTION: Maximize Present Net Value (PNV) with Assigned Values						
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	3	4 5
Acre Per Acre	Acres/Period	GE	25			
Admin. Sites		LE	26			
Acre Per Acre	Acres/Period	EQ	16			
Disp/Wilder. Rec						
Acre Per Acre	Acres/Period	EQ	1			
Dev.Recreation						
Permitted AUMs	AUMs/Year	GE				380000
		LE				500000
Structural Range	M\$/Year	GE	70			
Improvements		LE	100			

Discussion: Nondeclining yield [36 CFR 219.16(a)(1)], ending inventory [36 CFR 219.16(a)(2)(iv)], and long-run sustained yield link [36 CFR 219.16(a)(1)] comply with legal requirements. Nondeclining yield applies to all time periods, while ending inventory and long-run sustained yield link apply to Period 8. 36 CFR 219.16(a)(2)(iii) requires that all even-aged stands scheduled to be harvested during the planning period generally will have reached the culmination of mean annual increment of growth.

Table 96 (Continued)

This alternative was developed to address Issue 2: to provide a relatively high level of permitted AUMs by the fifth decade and have wildlife habitats maintained at a relatively high level. Timber would be at a level that could be accomplished by the dollars that remained. The acre per acre constraint on "All Forest" sites required the model to choose Prescription K for Forestwide costs and Prescription G for Administrative Site costs. The constraint on structural range improvements was intended to prevent the model from delaying the implementation of all of the maximum range prescriptions until the second decade and by doing so, delay problem resolution until the second decade. The acre per acre constraint on recreation (dispersed wilderness, and developed) was included because of the link between wildlife recreation and other forms of recreation. The constraint on recreation was to force the model to choose intermediate prescriptions for all types of recreation. Recreation costs were added to bring these costs to the level needed to meet realistically the objectives of the alternative. In this alternative, total wilderness dollars were increased to \$120,000 in the first decade with a five percent increase per period over the planning horizon, and the developed recreation budget was increased five percent per time period over the planning horizon after the first decade.

This run did not result in a satisfactory solution. Because of the budget constraint in the first decade, the model delayed harvesting most of the timber until the second decade. By doing this the model was able to choose more maximum wildlife prescriptions and as a result provide a higher PNV. The amount of coniferous habitat provided as a result of this run was higher than necessary to maintain a balance between coniferous habitat and herbaceous forage and cover habitat. Even though the issue addressed by this run was not related to timber, it was felt that a timber harvest of 85.3 MCF in the first decade was not a viable alternative harvest level. The PNV for the run was \$311,173,000.

ALTERNATIVE: Range Wildlife Conflict Resolution-Run 2							
OBJECTIVE FUNCTION: [1] Maximize Timber 1st Decade; [2] Maximize PNV with Assigned							
INCREMENTAL	UNITS OF	CONSTRAINTS BY PERIOD					
CONSTRAINTS	MEASURE	OPERATOR	1	2	3	4	5
Herb.Habitat Valued	MRVD/Year	GE					223
RVDs		LE					300
Conf.Forest Valued	MRVD/Year	GE					180
RVDs		LE					300

Discussion: The first objective function in this run was to maximize sawtimber in the first decade. This was added to solve the problem of too little sawtimber in the first decade of run one. The constraints identified in run one above along with those added in this run insured that the issue would be addressed. Timber would be produced at a level allowed within the limits of the other constraints. The lower limit of the constraint on herbaceous forage and cover was the amount that was produced in run one. This level was considered to be a reasonable number of RVDs to help provide for resolution of the issue as it related to wildlife and still allow for the constrained level of permitted AUMs. The lower limit of the constraint on coniferous habitat was identified as being the amount needed to assure a balance between the two major types of habitats. This alternative was also adjusted to correct the GA and FA&D Structural Construction and Reconstruction allocations.

It was determined by the Management Team that this run met the objectives of the alternatives. The PNV for the run was \$243,637,000.

Table 96 (Continued)

ALTERNATIVE: NonCommodity Emphasis-Run 1					
OBJECTIVE FUNCTION: (1) Maximize NonMarket Outputs; (2) Maximize PNv with Assigned and Market Values					
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	CONSTRAINTS BY PERIOD 3 4 5
Nondeclining Yield	MCF/Year				
Ending Inventory	MCF/Year				
Long-Run Sustained Yield Link	MCF/Year				
Culmination Mean Annual Increment					
Minimum Mgmt. Requirement					
Budget	M\$	LE	7711		
Acre Per Acre Whole Forest	Acres/Period	GE	3342890		
		LE	3342891		
Acre Per Acre Admin. Sites	Acres/Period	GE	25		
		LE	26		

Discussion: Nondeclining yield [36 CFR 219.16(a)(1)], ending inventory [36 CFR 219.16(a)(2)(iv)], and long-run sustained yield link [36 CFR 219.16(a)(1)] comply with legal requirements. Nondeclining yield applies to all time periods, while ending inventory and long-run sustained yield link apply to Period 8. 36 CFR 219.16(a)(2)(iii) requires that all even-aged stands scheduled to be harvested during the planning period generally will have reached the culmination of mean annual increment of growth.

This alternative was developed to satisfy the requirement to develop an alternative that emphasizes nonmarket opportunities. Emphasis is placed on those outputs having nonmarket values. Management for other resources is at economically and environmentally feasible levels consistent with the emphasis on market oriented outputs. This alternative also addressed the resolution of Issues 4, 5, 7 and 8. The distinct feature of this run was the objective function that maximized nonmarket outputs. The Forestwide analysis area and Administrative Sites were constrained to select prescription W.

This run did not result in a satisfactory solution. Because of the budget constraint in the first decade and the high PNv associated with the Maximum Wildlife prescriptions, the model choose max wildlife prescriptions up to the budget constraint level and low dispersed, wilderness, and developed recreation. The PNv for this run was \$353,344,000.

ALTERNATIVE: NonCommodity Emphasis-Run 2					
OBJECTIVE FUNCTION: (1) Maximize NonMarket Outputs; (2) Maximize PNv with Assigned and Market Values					
CONSTRAINTS	UNITS OF MEASURE	OPERATOR	1	2	CONSTRAINTS BY PERIOD 3 4 5

Same as Run 1 except an Amount/\$ constraint was added to force the model to choose the Intermediate Prescription for dispersed, developed, and wilderness recreation.

Discussion: This run was presented to the Management Team for review and consideration. It was determined that the GA budget was \$200,000 higher than necessary to meet the objectives of the alternative. The PNv for the run was \$326,260,000.

Table 96 (Continued)

As a result of the Management Team recommendation, the CA budget was reduced \$200,000 and a third run was made of the Noncommodity Emphasis Alternative. In addition, an adjustment was made to ensure that range capacity and permitted grazing use were equal in the first and second time periods. The PNW was adjusted accordingly and this run was accepted as the final version of the Noncommodity Emphasis Alternative. The PNW is \$341,221,000.

Departure
Analysis

Departures from nondeclining yield were not developed for any of the alternatives except the Proposed Action Alternative. This discussion provides the rationale for the decision not to create additional departure alternatives.

Most timber prescriptions on the Forest have a positive present net value. In the Proposed Action Alternative departure run, the alternative was constrained to allow timber volume to fluctuate 25 percent above and 25 percent below the nondeclining yield for a given period except the first period which was constrained to harvest 30 MMBF annually. The objective function that minimized cable volume was removed. The results indicated that the departure resulted in only a one percent increase in volume over the first 50 years of the planning horizon, and decreased three percent over the 200 year planning horizon. There was a shift in allocation to those areas requiring cable harvest systems; however, this indicates that the steep slope areas are in some cases more economical to harvest due to the higher volumes of timber per acre. This would not be expected to affect PNW significantly.

The 25 percent upper and lower limits for departure were developed as a result of conversations with timber industry representatives. This is the amount of fluctuation to which they could feasibly respond. This departure run was made primarily to compare volumes produced and the LTSYC, not because any of the identified criteria were necessarily met.

In addition to the above analysis, all alternatives were evaluated against the following departure criteria:

- Mortality losses reduced or prevented
- Age-size class distribution improved facilitating LTSYC
- Corresponding base sale schedule would cause adverse economic impact upon a community
- No alternatives considered provide a base sale schedule that achieve goals of RPA
- Overall multiple-use objectives would be better met

None of the criteria were met by any of the alternatives.

SOCIAL & ECONOMIC
IMPACT ANALYSIS

Social Overview

Social Impact Analysis is defined in FSM 1973 as "the determination of how Forest Service policies and action effect the quality of people's lives or social well-being. The primary goal is to enable managers to take into account important social concerns in making decisions. Social Analysis is accomplished by comparing current social conditions in an area influenced by Forest Service action with conditions likely to occur as a result of implementing management alternatives".

The objectives of social impact assessment are to:

- Determine in a systematic manner the social effects of Forest Service planning and decision-making.
- Provide the decision-maker with an assessment of social effects which can be considered along with the assessments of economic, physical, and biological effects in order to make a balanced decision which promotes the goal of attaining "productive and enjoyable harmony between man and his environment".
- Satisfy the requirements of the law (NEPA, NFMA, CEQ) and of Forest Service policy (FSM 1973).

The following steps were used in the social analysis:

Delineate geographic zones of influence that will be used to assess the effects of National Forest management on social variables. The first zone is the primary zone which is made up of the multi-county area (used by IMPLAN) and the sub-areas: a breakdown of local areas having a strong dependence on the National Forest. The secondary zone of influence comes from outside the primary zone, consisting of nonlocal and generally amenity uses. The third zone is the Native American and consists of Indian tribes or groups using the Forest.

Eight social variables affected by National Forest management are evaluated for each alternative. Alternatives will be measured against the current situation baseline for each variable. The variables are: Employment, Income, Population, Community Lifestyle, Social Organization, Relationship to Minority Groups, Land Use Patterns, and Attitudes, Beliefs, and Values.

Alternatives will be measured against the current situation baseline for each variable.

Economic Overview

The IMPLAN model is used to respond to the 36 CFR 219 Planning Requirements for Economic Impact Analysis. It has been designed to provide the planning analyst with the capability to construct a regional input-output model for any applicable area and perform evaluations of potential economic effects in support of the planning process.

The outputs for each alternative (FORPLAN results) are entered into the IMPLAN model. The resulting figures for employment, income, and population are evaluated against the current situation baseline for effects on the subareas.

The inputs used by the IMPLAN model are:

- Timber, Sawtimber (MMBF)
- Timber, Products (MMBF)
- Fuelwood, Commercial (MMBF)
- Fuelwood, Personal-Nonresident (MMBF)
- Fuelwood, Personal-Resident (MMBF)
- Picnicking-Nonresident (MRVD)
- Picnicking-Resident (MRVD)
- Camping-Nonresident (MRVD)
- Camping-Resident (MRVD)
- Waterbased Recreation-Nonresident (MRVD)
- Waterbased Recreation-Resident (MRVD)
- Dispersed Nonmotorized Recreation-Nonresident (MRVD)
- Dispersed Nonmotorized Recreation-Resident (MRVD)
- Dispersed Motorized Recreation-Nonresident (MRVD)
- Dispersed Motorized Recreation-Resident (MRVD)
- Hunting, Big Game (MRVD)
- Hunting, Small Game (MRVD)
- Wildlife, Nonconsumptive (MRVD)
- Fishing-Nonresident (MRVD)
- Fishing-Resident (MRVD)
- Livestock, Cow/Calf (MAUM)
- FS Employee Compensation (MM\$)
- FS O & M and Investment (MM\$)

The outputs are changes in employment and income (Forest Service generated) by sector. Sixty-four sectors are impacted by the Forest Service program. The sectors impacted most significantly are identified in tables in Chapters 3 and 4. They are: Logging and Sawmills, Livestock, Wholesale Trade, Retail Trade, Owner Occupied Dwellings, Restaurants and Bars, and Automobile Repair and Services.

The social analysis was conducted in accordance with "Guidelines for Social Impact Assessment", Region 3.

The economic analysis is based on the "IMPLAN User's Manual", August 1982 and IMPLAN, the Forest Service Model to assess economic impacts required by NEPA, NFMA, and to help assess demand. The analysis is conducted in accordance with "Guidelines for Social Impact Assessment", Region 3.

EFFECTS OF BENCH-
MARKS, CONSTRAINTS
AND ALTERNATIVES

The effects of the benchmarks, discretionary constraints, and alternatives are displayed in Chapters 2 and 4 and Appendices B of the EIS, and the Analysis of the Management Situation (AMS). The analysis of trade-offs among alternatives is contained in Chapters 2 and 4 of the EIS. The analysis of constraints within alternatives is described elsewhere in Appendix B.

C. Range of Outputs

The following charts depict graphically various levels of outputs for the Benchmark and Alternative runs. When ever output quantities were so close as to present problems in plotting, they were combined under a single output line which best represented the average for that particular group.

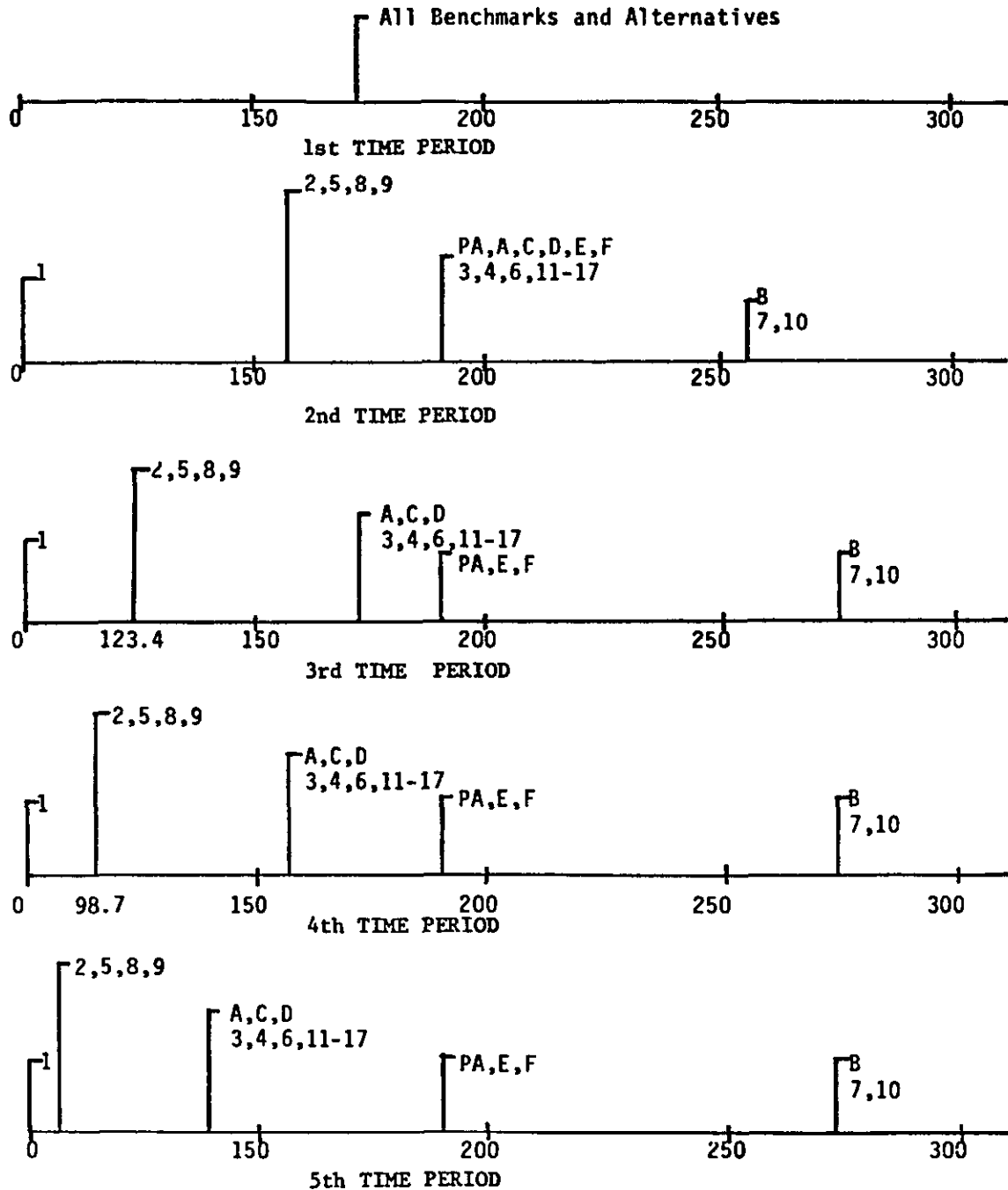
These charts are intended as rough visual references which display general relationships only. Due to space limitations and gross scales used in the base lines of many of the graphs, there may be some errors in the location of the output line. These errors should not be viewed as serious as the graphs are intended to give only rough comparisons between themselves.

LEGEND

OUTPUTS	BENCHMARK RUNS	ALTERNATIVE RUNS
Developed Recreation	1. Minimum Level	PA - Preferred Alternative
Dispersed Recreation	2. Low Intensity Level	A - Current Alternative
Wilderness Recreation	3. Current Level	B - RPA Alternative
Wildlife	4. Max. Timber (1st Decade)	C - Range Commodity
Grazing Capacity	5. Max. Timber (Min. Cost)	Emphasis
Grazing - Permitted	6. Max. Grazing Capacity	D - Timber Commodity
Merchantable Volume	7. Max. Wildlife Habitat	Emphasis
Total Fuelwood	8. Max. Watershed Condition	E - Range/Wildlife
Products	9. Max. Water Yield	Conflicting Resolution
Sawtimber	10. Max. Dispersed Recreation	F - NonCommodity
Water Yield	11. Max. PNV Assigned W/25% Sequential Upper and Lower Bounds	Emphasis
	12. Max. PNV Market	
	13. Max. Timber W/25% Upper and Lower Bounds (8 Periods)	
	14. Max. Long Term Sustained Yield	
	15. Max. Wilderness	
	16. Minimum Wilderness	
	17. Max. PNV Assigned	

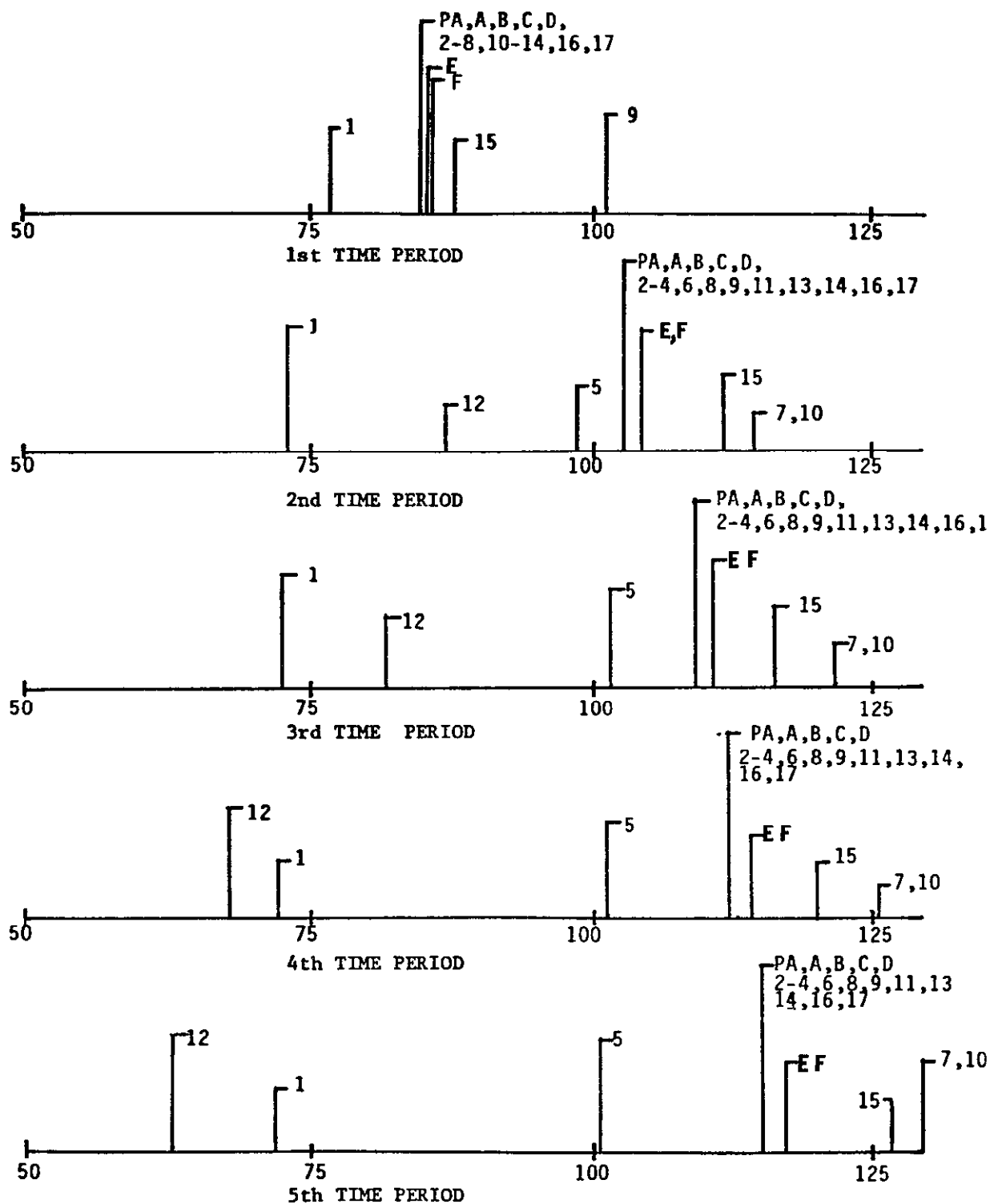
OUTPUTS

Dev. Rec (MRVD)



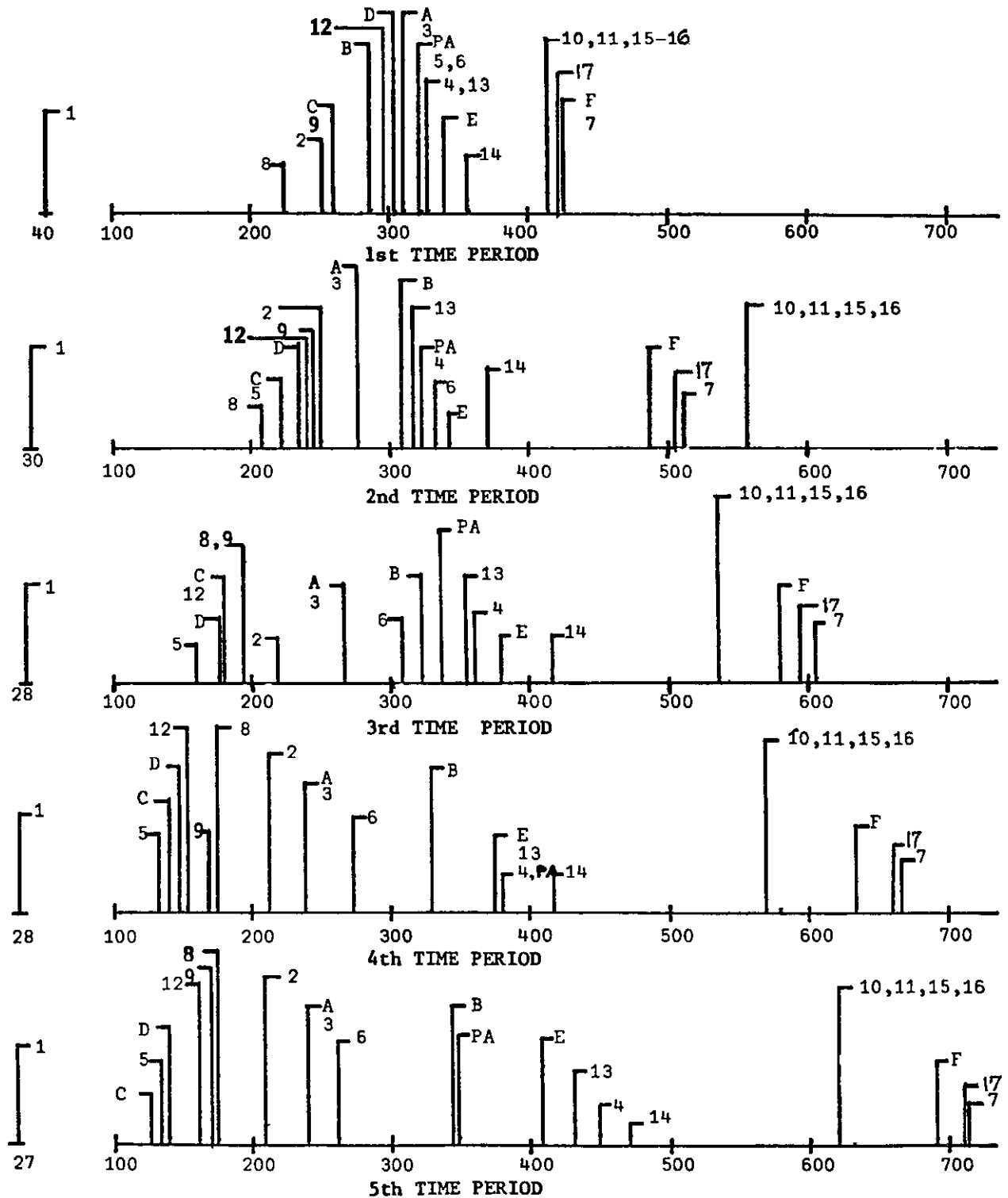
OUTPUTS

Wilderness Rec. (MRVD)



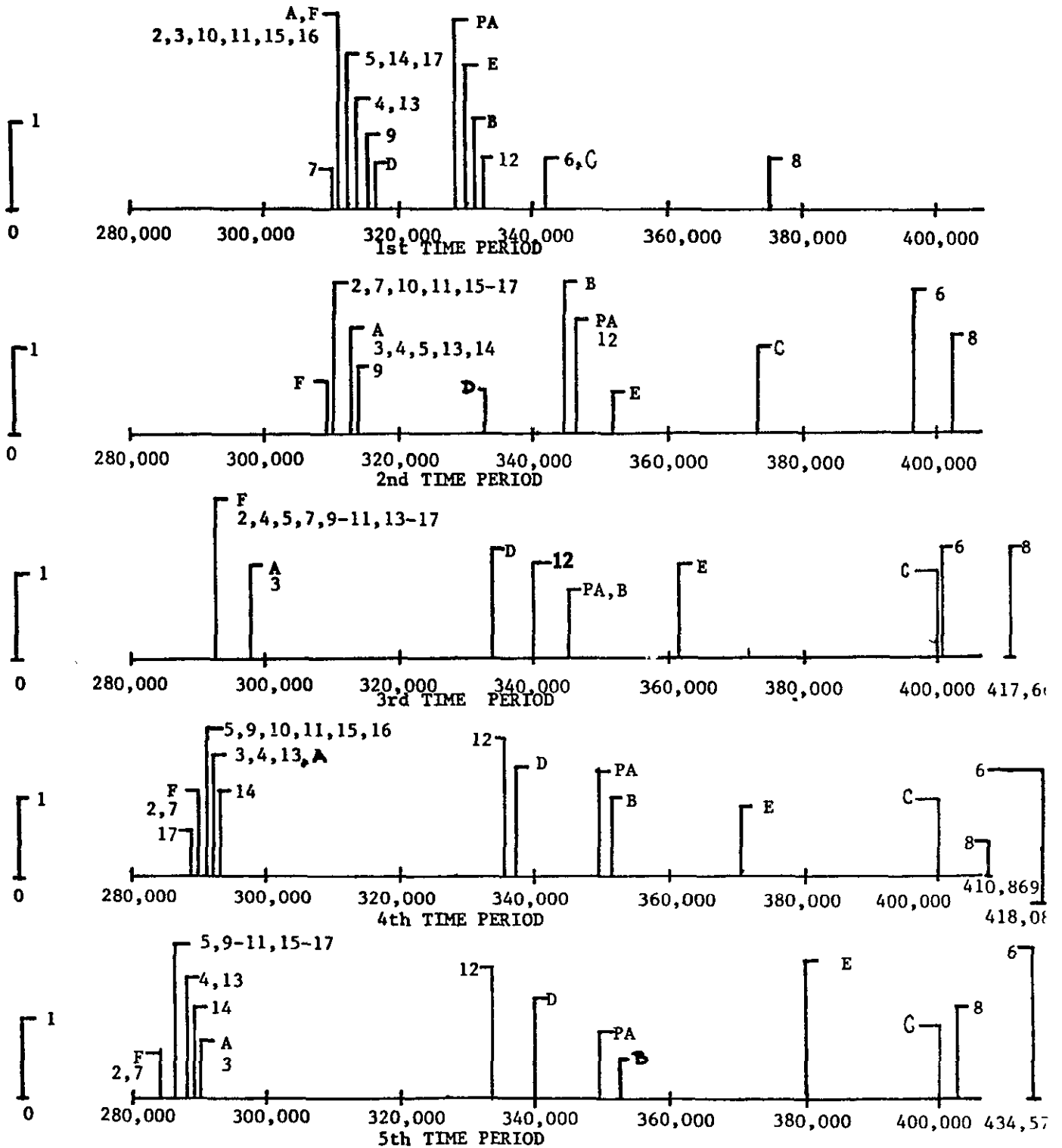
OUTPUTS

Wildlife (MRVD)



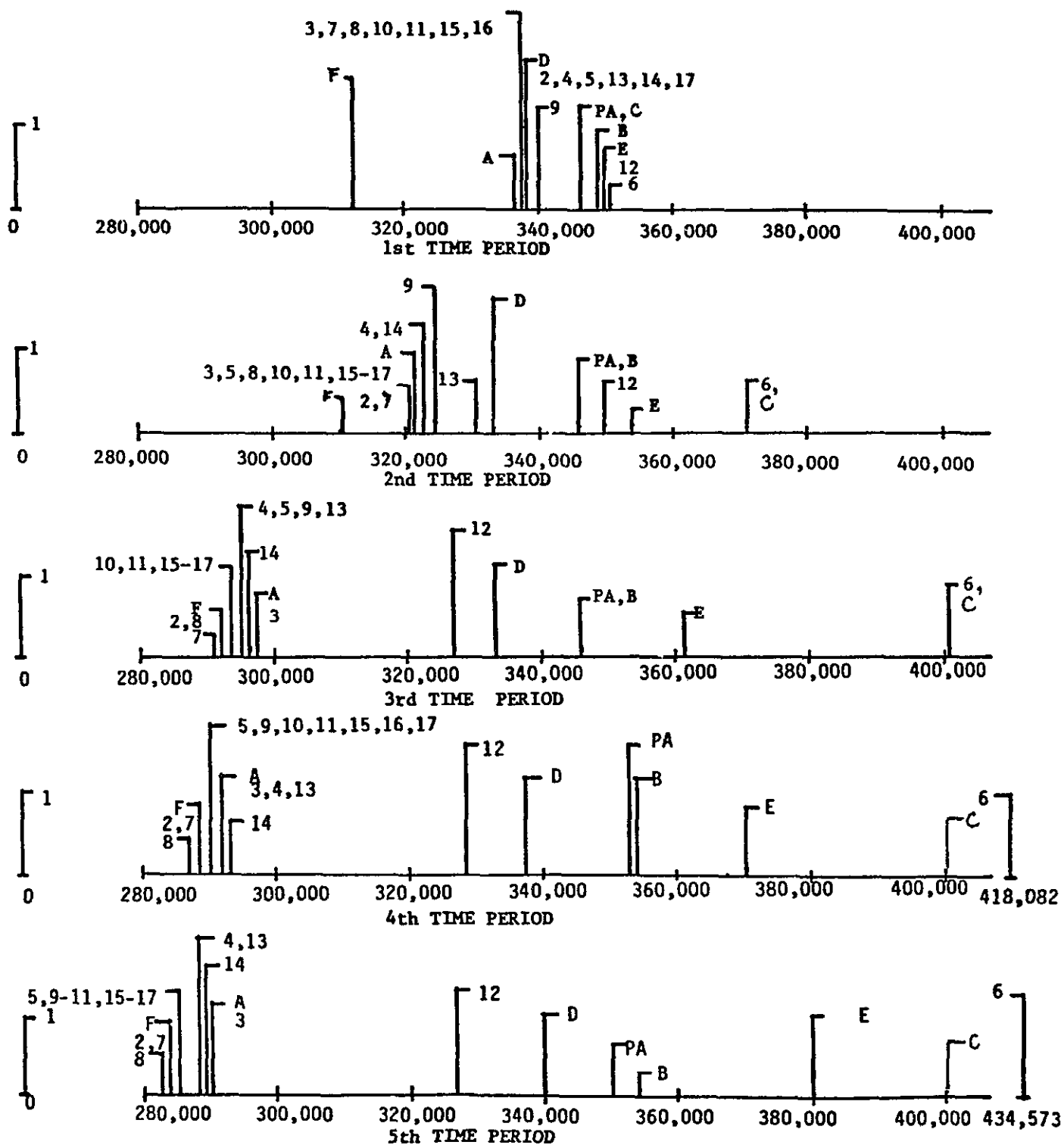
OUTPUTS

Grazing Capacity (AUM)



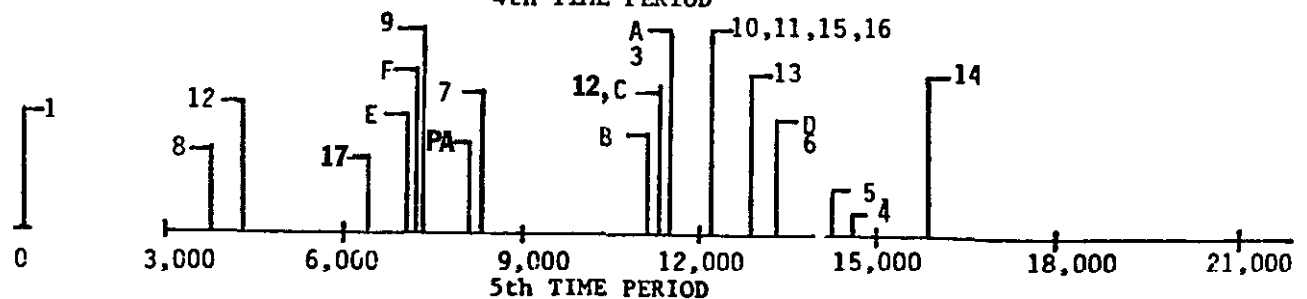
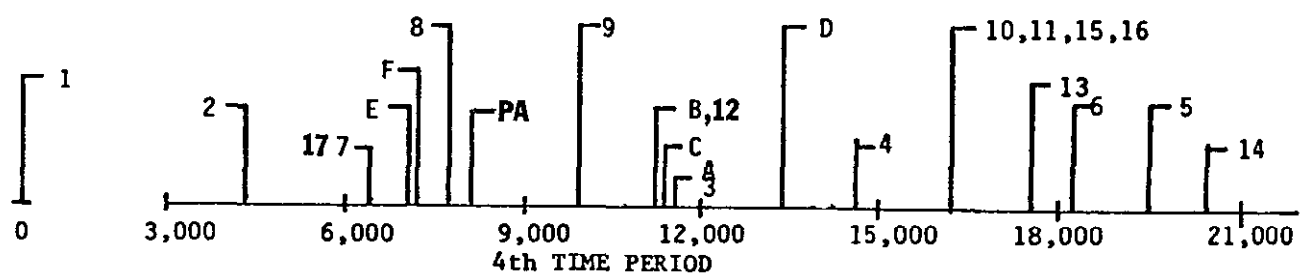
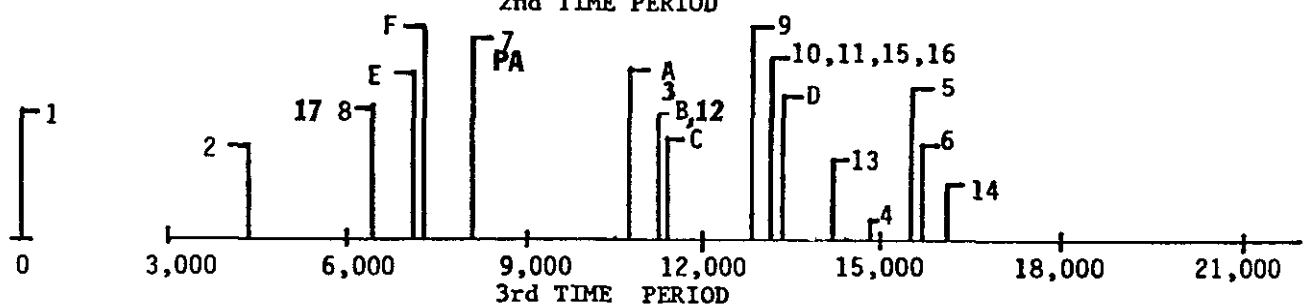
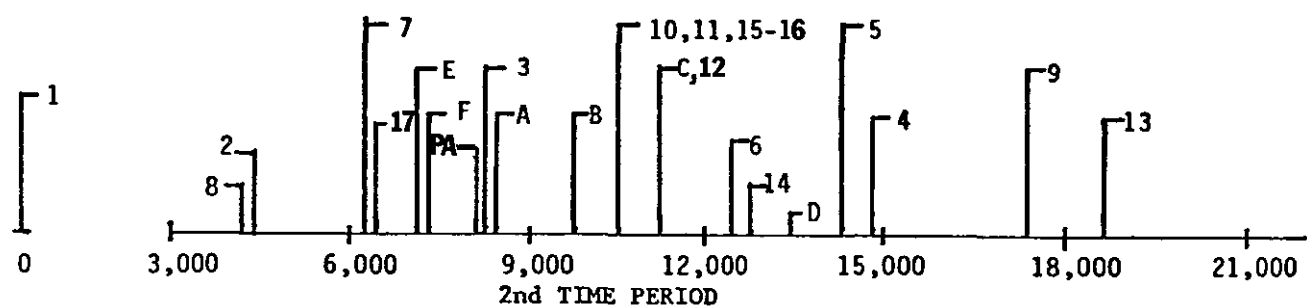
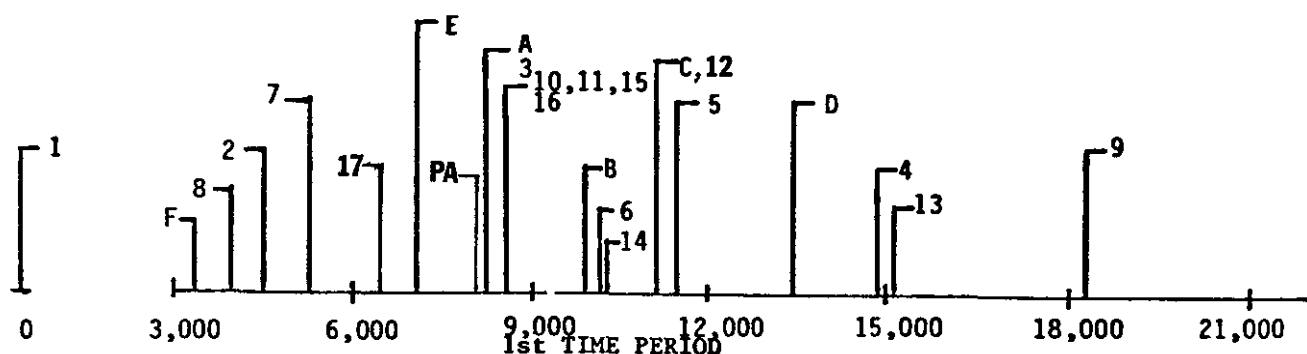
OUTPUTS

Grazing-Permitted (AUM)



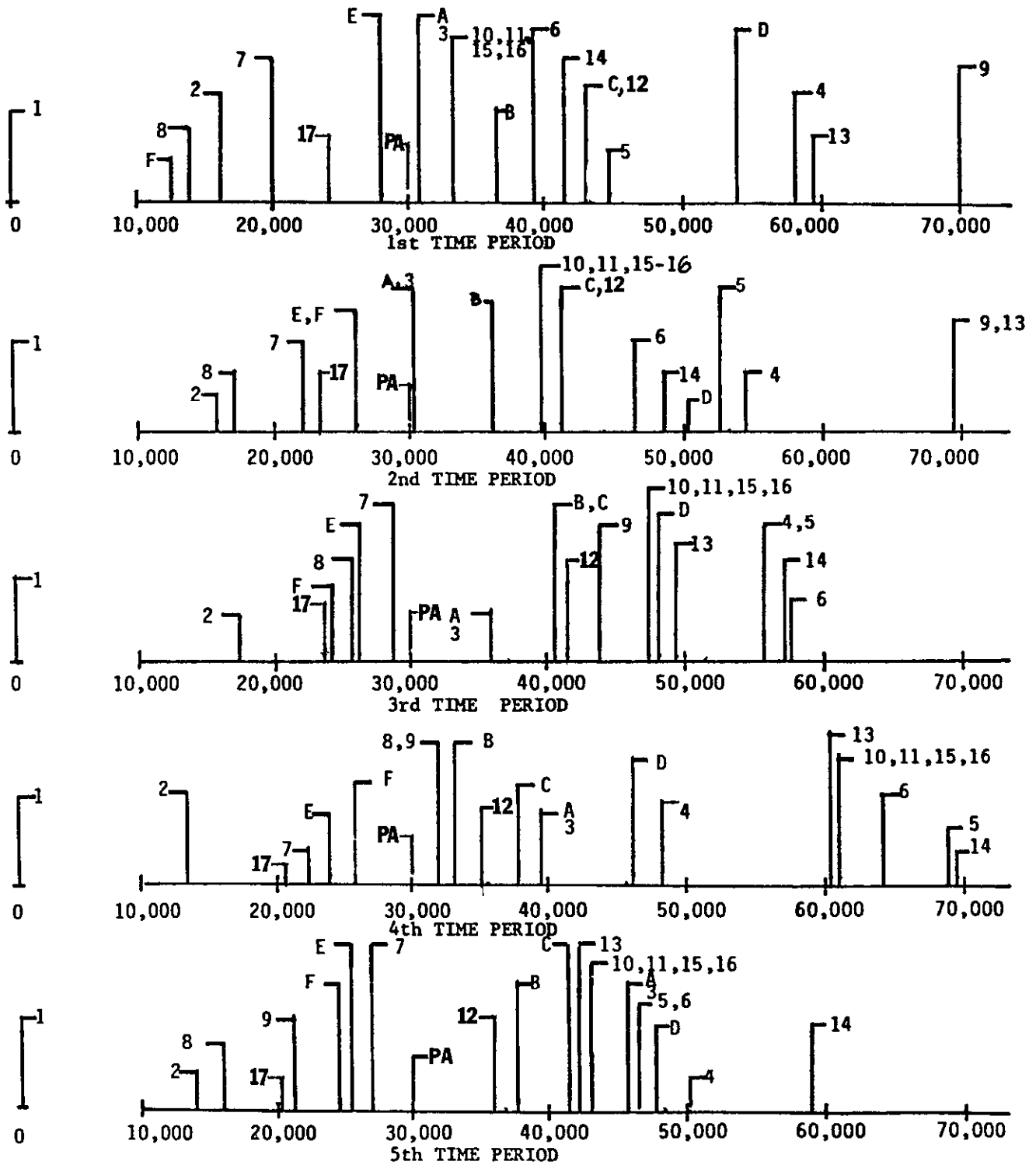
OUTPUTS

Merch. Volume (MCF)



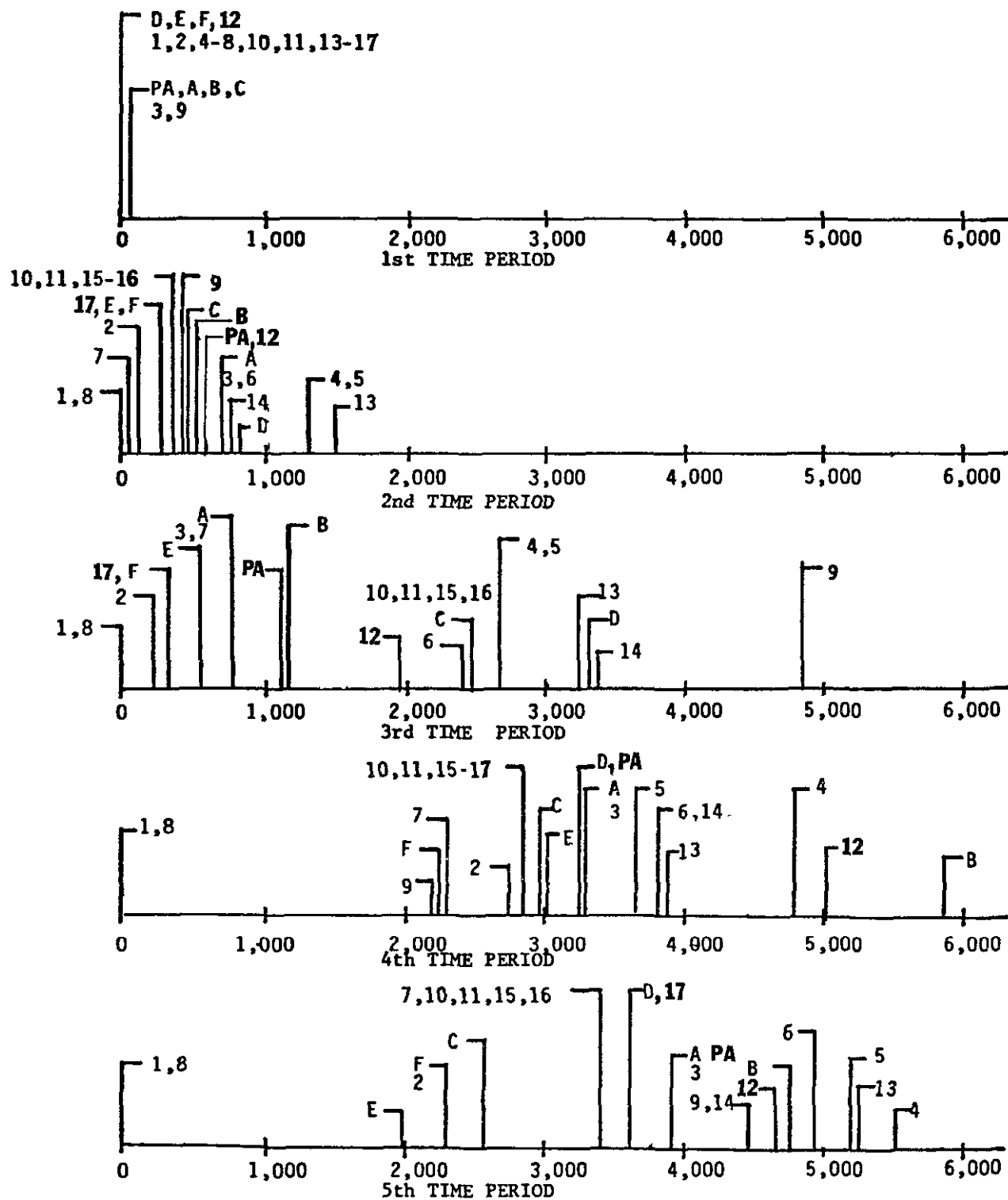
OUTPUTS

Sawtimber (MBF)



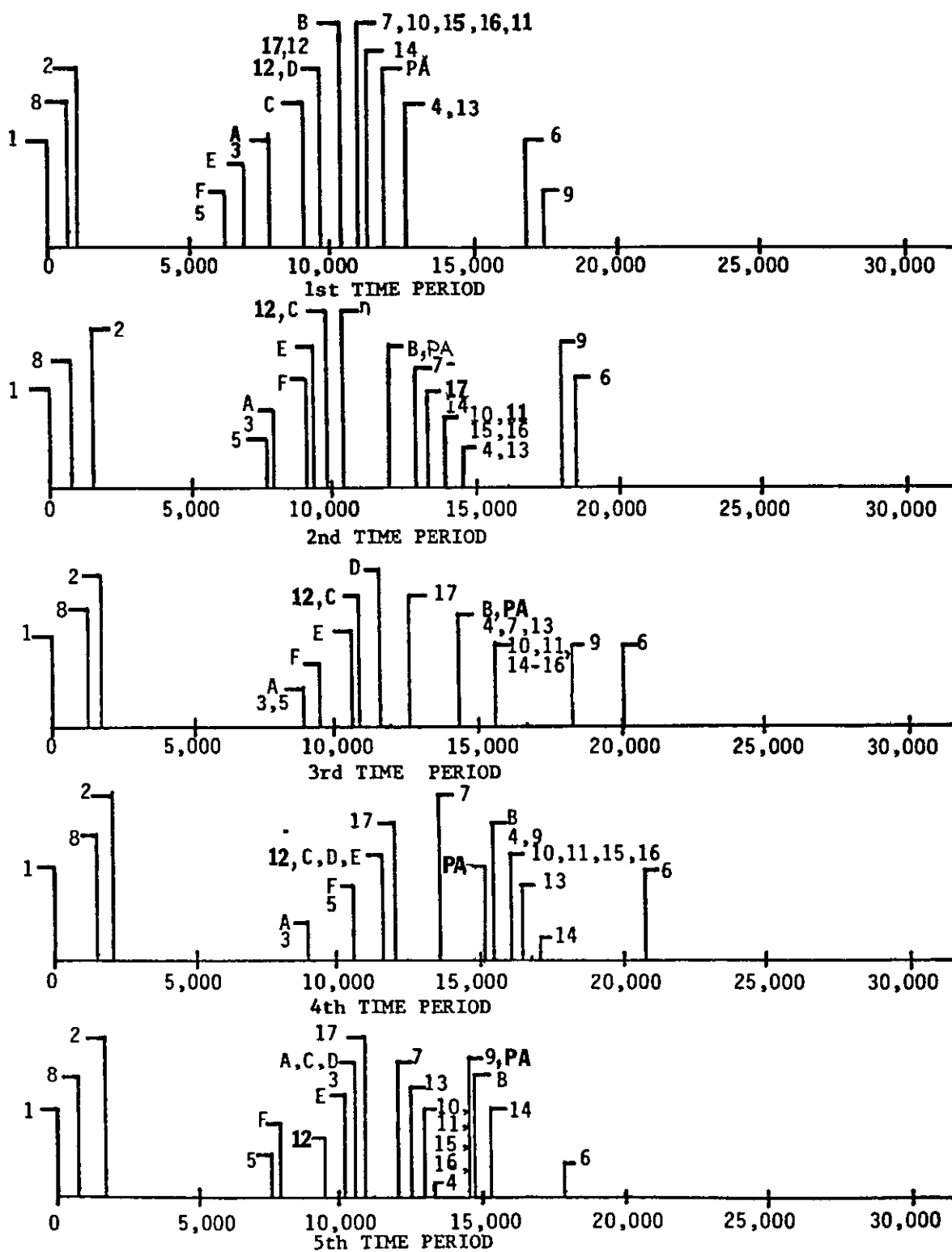
OUTPUTS

Products (MBF)



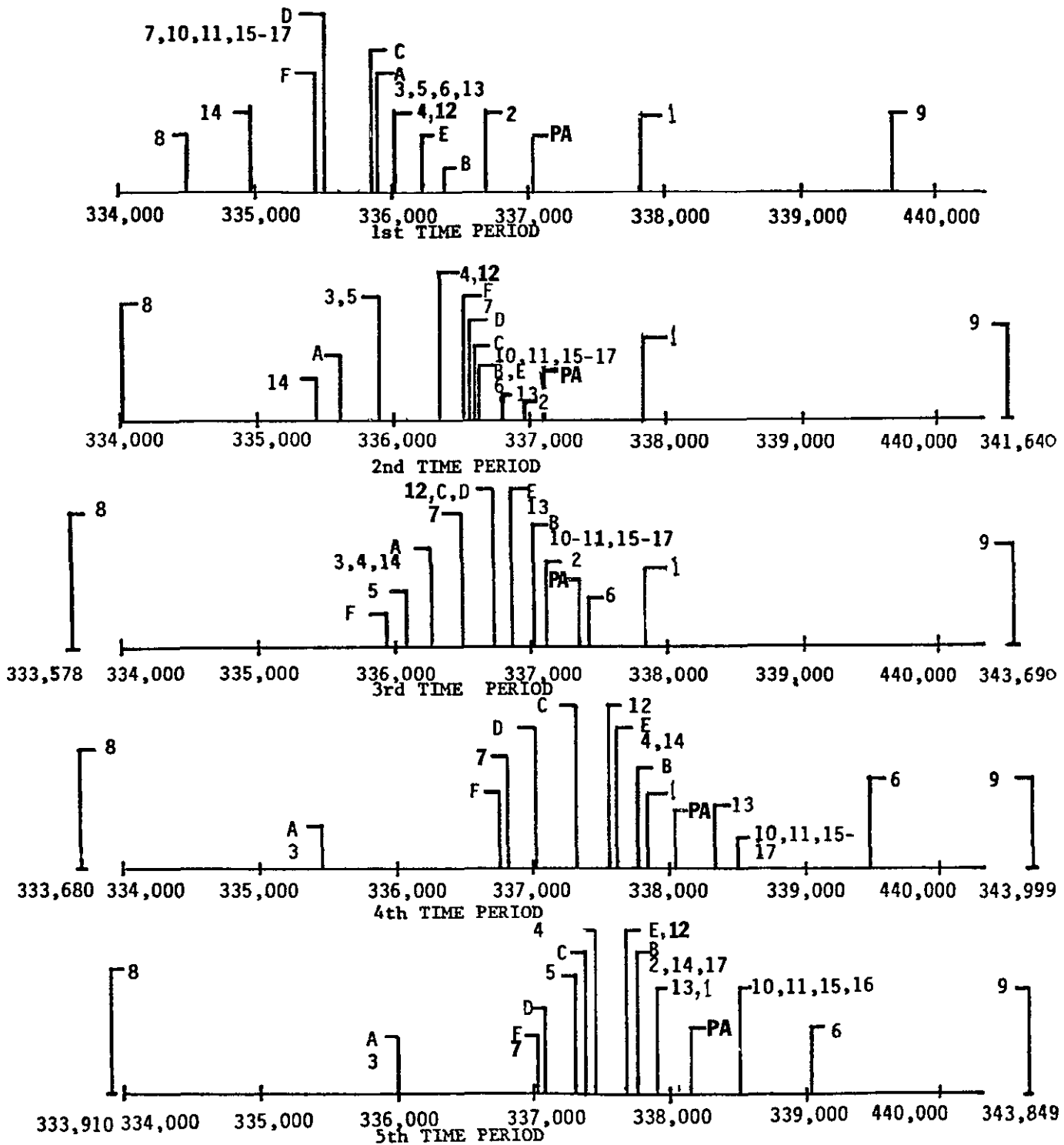
OUTPUTS

Fuelwood (MBF)



OUTPUTS

Water Yield (Acre Feet)



D. Alternative Allocations by Management Area

MANAGEMENT AREA 2A

Alternative A, C, D & E

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside wilderness, emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Emphasis within wilderness would be on maintaining and improving wilderness facilities. Funding would be available to maintain all facilities (including trails) and construct priority improvements.

MANAGEMENT AREA 2B

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many

improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced. Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside wilderness, emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above existing capacity but below existing permitted numbers. Management direction for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvement in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Within wilderness, emphasis would be placed on maintaining existing facilities (including trails). Funding would be available to maintain all existing facilities.

Alternative C

Outside wilderness, range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative D

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative F

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If wildlife conflicts can be avoided, permittee cooperation may be used to sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness, emphasis would be on maintaining dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities and construct some priority facilities.

MANAGEMENT AREA 2C

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above existing capacity but below existing permitted numbers. Management direction for the timber resource will be to utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvement in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C & D

Emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations.

Alternative E & F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 2D

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on

getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C

Range emphasis will be to provide the maximum available forage for domestic livestock within the biological capability of the Forest. Adequate funding will be available to fully develop all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Alternative D & E

Emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the Forest. Funding will be available to fully develop all allotments. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If wildlife conflicts can be avoided, permittee cooperation may be used to sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 2E

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative B

Outside wilderness emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C & D

Outside wilderness range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative F

Emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations.

Within wilderness emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 2F

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside wilderness, emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above existing capacity but below existing permitted numbers. Management direction for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvement in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Within wilderness, emphasis would be to maintain dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C

Outside wilderness, emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain

existing AUMs. Suitable timber areas will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations.

Within wilderness emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative D

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside wilderness, emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Within Wilderness emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 26

Alternative A

Direction outside of wilderness is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside wilderness, emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above existing capacity but below existing permitted numbers. Management direction for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvement in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Within wilderness, emphasis would be to maintain dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C

Range emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to develop fully all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Range emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to develop fully all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative D

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative F

Outside wilderness, emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be to maintain dispersed and wilderness facilities. Funding would be adequate to maintain all facilities and construct priority facilities.

MANAGEMENT AREA 2H

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative C

Range emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Alternative E

Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative F

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

MANAGEMENT AREA 3A

Alternative A & C

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions

currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness emphasis would be to maintain dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative D

Outside wilderness range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness range emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside wilderness range emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If wildlife conflicts can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness emphasis would be on maintaining dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 3B

Alternative A & C

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B

Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative D

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to partially sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Alternative E

Emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained, and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Alternative F

Range emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 3C

Alternative A, C, & D

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative E

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for

the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative E Range emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions presently being applied. Wildlife emphasis will be placed on maintaining existing wildlife habitats and the long term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative F Emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

MANAGEMENT AREA 3D

Alternative A Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C & D Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Alternative E Range emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to develop fully all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Alternative F

Range emphasis will be placed on reconstruction of priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 4A

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C

Outside wilderness, range emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to develop fully all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative D

Outside wilderness, emphasis will be on reconstructing, when needed, as many range improvements as possible within the current funding level. Capacity will decline through time as improvements deteriorate and are not replaced. Management direction for suitable timber areas will be to utilize high-intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside wilderness, direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to improve wildlife habitats capable of supporting an increasing population of wildlife. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness emphasis would be to maintain dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 4B

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C

Outside wilderness, range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing

permitted numbers. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative D

Outside wilderness range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations. The San Francisco River wilderness study area is recommended for wilderness designation in this alternative.

Within wilderness emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 4C

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

- Alternative B** Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above existing capacity but below existing permitted numbers. Management direction for the timber resource will be to utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvement in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.
- Alternative C** Range emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to develop fully all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.
- Alternative D** Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.
- Alternative E** Range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.
- Alternative F** Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations. The Hells Hole wilderness study area and the San Francisco River study area would be recommended for wilderness designation.

MANAGEMENT AREA 4D

- Alternative A** Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.
- Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative E

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative D

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to help sustain AUMs. Management direction for suitable timber areas will be to utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain minimum viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative F

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 5A

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitat capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, emphasis will be placed on reconstruction priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C

Outside wilderness, emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to develop fully all allotments. Currently roaded timber producing areas will be managed extensively. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative D

Outside wilderness, range emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to develop fully all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Currently roaded timber producing areas will be managed extensively. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside wilderness range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Management direction for suitable timber areas will be to utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities and construction of priority facilities.

MANAGEMENT AREA 5B

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside wilderness, emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C & D

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to partially sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside wilderness, emphasis will be placed on reconstruction priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 5C

**Alternative A, C
& D**

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative E

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber

areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If wildlife conflicts can be avoided, permittee cooperation may be used to sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness, emphasis would be on maintaining dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities and construct some priority facilities.

MANAGEMENT AREA 5D

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B & D

Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative C

Range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Alternative E

Range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Alternative F Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 8A

Alternative A Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative E Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative C Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Alternative D Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to help sustain AUMs. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis is placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery

Alternative F Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 6B

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within Wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative C

Outside the wilderness, emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Currently roaded timber producing areas will be managed extensively. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative D

Outside the wilderness, range emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to fully develop all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside the wilderness, range emphasis will be on reconstructing, when needed, as many range improvements as possible within the current funding level. Range capacity will decline through time as range improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate yields and

silvicultural prescriptions presently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside the wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 6C

Alternative A.

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B

Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative C

Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife habitat will be maintained to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative D

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be to meet the legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain viable populations.

Alternative E

Emphasis will be placed on reconstructing priority range improvements only with funding that is less than the current level. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis

level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 6D

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C

Range emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to fully develop all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Alternative D

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to help sustain AUMs. Management direction for suitable timber areas will be to utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at a level needed to maintain minimum viable populations.

Alternative E

Emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Currently roaded timber producing areas will be managed extensively. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Alternative F Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 7A

Alternative A Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above existing capacity but below existing permitted numbers. Management direction for the timber resource will be utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing conditions as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvement in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C & E Emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Alternative C Emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations.

Alternative F Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 7B

Alternative A Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management

emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C & D

Emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations.

Alternative E

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation can be used to partially sustain AUMs. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 7C

Alternative A

Direction is to manage the area for the protection of the Fort Bayard water supply. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Fuelwood will be managed for selective harvest of dead and down fuelwood only. Mineral withdrawals will be maintained. Existing vehicle closures will be continued.

Alternative B, C
& D

Direction is to manage to provide a high level of commodity outputs while providing for the protection of the Fort Bayard water supply. The existing mineral withdrawals will be eliminated and the area will be opened for leasing. Lease stipulations will be used to protect the water supply for the Fort Bayard Hospital. Fuelwood harvest will be allowed on accessible and potentially accessible fuelwood areas. Permitted grazing will be initiated at a level that will maximize livestock production to a level compatible with the maintenance of the Fort Bayard water supply. Wildlife will not be emphasized. Populations would be expected to decline. The area will be opened to a full range of recreation opportunities that will not degrade the water supply.

Alternative E

Direction is to manage for protection of water supply while providing for grazing of domestic livestock. Wildlife and domestic livestock will receive equal portions of the available forage. Wildlife populations would be expected to decline but will be maintained at a level higher than in alternatives B, C, and D. Mineral withdrawals would be maintained. Fuelwood harvest will be permitted on accessible areas for dead and down, and green fuelwood. Vehicle closures would be continued.

Alternative F

Direction is to manage to maximize wildlife outputs. All available forage will be allocated to wildlife. The direct wildlife improvements necessary to maximize wildlife habitat will be constructed. No permitted grazing of domestic livestock will be initiated. Mineral withdrawals will be maintained. Fuelwood harvest will be allowed only when the harvest will contribute to the improvement or maintenance of wildlife habitat. Vehicle closures will be continued. The water supply for the Fort Bayard Hospital will be protected.

MANAGEMENT AREA 7D

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative E

Management emphasis will be to reconstruct existing range improvements when needed. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C

Emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop the allotment. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Alternative D

Emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations.

Alternative E

Range emphasis will be to reconstruct, when needed, existing range improvements. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 7E

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside the wilderness, management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Within wilderness areas, emphasis will be to maintain dispersed and wilderness facilities. Funding would be adequate to maintain existing facilities.

Alternative C, D
available

Outside the wilderness, range emphasis will be on providing the maximum

forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to fully develop all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities [including trails]. Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E
available

Outside the wilderness, range emphasis will be on providing the maximum

forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to fully develop all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities [including trails]. Funding would be adequate to maintain all existing facilities.

Alternative F

Outside the wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities [including trails]. Funding would be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 7F

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside the wilderness, emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis will be on maintaining dispersed and wilderness facilities. Funding would be available to maintain existing facilities.

Alternative C & D

Outside the wilderness, range emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the forest. Adequate funding will be available to fully develop all allotments. All existing improvements will be reconstructed on schedule. Management direction for the suitable timber areas will be to utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Wildlife emphasis is placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Within Wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside the wilderness, emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Currently roaded timber producing areas will be managed extensively. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F

Outside the wilderness, range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, partial cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 76

Alternative A

Outside the wilderness, the direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Within wilderness, emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative B

Outside the wilderness, management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Within wilderness, emphasis will be placed on maintaining dispersed and wilderness facilities.

Alternative C

Outside the wilderness, emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the Forest. Funding will be available to fully develop all allotments. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative D

Outside the wilderness, emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation may be used to sustain existing AUMs. Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E

Outside the wilderness, range emphasis will be to reconstruct, when needed, existing range improvements. Funds will be available for improvement construction on allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F Outside the wilderness, emphasis will be placed on reconstruction priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T & E species recovery will be limited to those species identified in approved recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 8A

Alternative A & D Emphasis would be to maintain priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result, low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open. Emphasis on both range and wildlife will be to maintain the current levels of management while maintaining or improving the quality of the wilderness.

Alternative B To improve or maintain wilderness quality, management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans. Funding would be available to maintain all wilderness facilities (including trails).

Alternative C Within the limits of wilderness quality protection, the emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans. In only priority wilderness facilities (including trails) would be maintained. Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.

Alternative E Outside the wilderness, emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized only for those species identified in recovery plans.

Within wilderness, emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.

Alternative F Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced. A high priority would be placed on maintaining wilderness recreation facilities (including trails). Funding would be adequate to maintain all existing facilities and construct priority facilities.

MANAGEMENT AREA 8B

- Alternative A Emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations provided the wilderness resource is maintained or improved.
- Alternative B Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans. Emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.
- Alternative C & D Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations. Emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.
- Alternative D Wildlife emphasis will be to meet legal requirements for wildlife species diversity and distribution of habitats. Funding is only at the level needed to maintain minimum viable populations. Emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would not be adequate to maintain all existing facilities. As a result low priority facilities would be abandoned over time. Trail maintenance would be at a level necessary to keep major trails open.
- Alternative E Wildlife emphasis will be placed on mitigation and coordination with other resource projects to maintain wildlife habitats capable of supporting existing wildlife populations. Emphasis would be on maintaining dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities.
- Alternative F Direction is to manage the various commodities at the current level. Wildlife emphasis will be placed on mitigation and coordination of other resource projects to maintain wildlife habitats capable of supporting existing wildlife populations. Emphasis would be on maintaining priority dispersed and wilderness facilities (including trails). Funding would be adequate to maintain all existing facilities and construction of priority facilities.

MANAGEMENT AREA 8A

- Alternative A Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.
- Alternative B Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management direction of the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will also be placed on maintaining existing wildlife habitat and long-term improvement in the diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

- Alternative C** Emphasis will be placed on providing the maximum available forage for domestic livestock within the biological capability of the forest. Funding will be available to fully develop all allotments. Currently roaded timber producing areas will be managed through extensive methods. Wildlife emphasis will be to mitigate and coordinate projects in an attempt to maintain habitat capable of supporting existing wildlife populations. T & E species recovery is emphasized for those species identified in recovery plans.
- Alternative D** Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above existing capacity but below existing permitted numbers. Management direction for the timber resource will be to utilize high intensity silvicultural prescriptions. All stands will be entered in the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvement in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.
- Alternative E** Emphasis will be on reconstructing, when needed, as many existing range improvements as possible with the current funding level. Capacity will decline through time as improvements deteriorate and are not replaced. Suitable timber will be managed through extensive methods and all stands will be regenerated naturally. Emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitat and improvements needed to support an increasing wildlife populations.
- Alternative F** Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain ALMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.
- MANAGEMENT AREA 9B**
- Alternative A & D** Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.
- Alternative B** Management emphasis would be to maintain an intermediate level of outputs in range wildlife and timber. All potential forage would be utilized. Range and wildlife funding would be used to maintain existing improvements and develop some high priority improvements. 52 percent of the suitable timber will be managed to maximize timber production with the remaining acres managed at the current level.
- Alternative C** Management emphasis is to provide the maximum available forage for domestic livestock from all acres except for suitable timber acres. Within suitable timber, emphasis will be to maintain forage production at existing levels. Wildlife populations will be maintained at existing levels. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied.
- Alternative E** Management emphasis is to manage suitable timber acres to provide the highest quality wildlife habitat. Within these areas timber will be managed by extensive management or by using silvicultural prescriptions designed to provide wildlife habitats, and stands will be regenerated naturally. Range emphasis will be directed toward providing the maximum available forage for domestic livestock. Funding will be available to fully develop most improvements needed for management.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 8C

Alternative A

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced.

Alternative B

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management direction for suitable timber areas will utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will also be placed on maintaining existing wildlife habitat and long-term improvement in the diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative C

Emphasis will be on reconstructing, when needed, as many range improvements as possible within the current funding level. Capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation can be used to help partially sustain AUMs. Suitable timber areas will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis is placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Alternative D

Emphasis will be on reconstructing, when needed, as many range improvements as possible within the current funding level. Capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation can be used to help partially sustain AUMs. Management direction for suitable timber areas will be to utilize high intensity silvicultural prescriptions. All stands will be entered within the first forty years and emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Alternative E

Emphasis will be on reconstructing, when needed, as many range improvements as possible with a funding level slightly higher than current. Capacity will decline through time as improvements deteriorate and are not replaced. Permittee cooperation can be used to help partially sustain AUMs. Suitable timber areas will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis is placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T&E species recovery will be limited to those species listed in approved recovery plans.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation can be used to help partially sustain AUMs. Suitable timber areas

will be managed by extensive methods and all stands will be regenerated naturally. Wildlife emphasis will be placed on maintaining existing wildlife habitats and the long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

MANAGEMENT AREA 8D

Alternative A, C & D

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced. Permittee cooperation can be used to help partially sustain AUMs.

Alternative B

Management emphasis will be to reconstruct existing range improvements when needed and develop new improvements on allotments showing a potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Management emphasis for the timber resource will utilize high intensity silvicultural prescriptions. All stands will be entered within the first 40 years. Emphasis will be placed on getting all stands managed for timber production into optimum growing condition as soon as possible. Emphasis will be placed on maintaining existing habitat and long-term improvements in diversity and distribution of habitat. T & E species recovery will be limited to those species identified in recovery plans.

Alternative E

Range emphasis will be on providing the maximum available forage for domestic livestock within the biological capability of the Forest. Adequate funding will be available to fully develop all allotments. All existing improvements will be reconstructed on schedule. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions presently being applied. Depending on site index, regeneration will be accomplished by planting or site preparation for natural regeneration. Wildlife emphasis will be placed on maintaining sufficient habitat to support existing populations through mitigation and coordination of other resource projects. T & E species recovery will be limited to those species listed in approved recovery plans.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

MANAGEMENT AREA 9E

Alternative A, C & D

Direction is to manage the various commodities at the current level. Wildlife emphasis will be on mitigation and coordination to maintain wildlife habitats capable of supporting existing wildlife populations. Timber emphasis will be to approximate the yields and silvicultural prescriptions currently being applied. Range emphasis will be to reconstruct as many improvements as possible within existing funds. This will result in a decline in capacity through time as improvements deteriorate and are not replaced. Permittee cooperation can be used to help partially sustain AUMs.

Alternative E

Emphasis will be on reconstructing, when needed, existing range improvements and constructing improvements on those allotments showing potential for increased capacity. Livestock capacity will increase by the fifth decade to a level above present capacity but below existing permitted numbers. Suitable timber areas

will be managed to approximate the yields and silvicultural prescriptions currently being applied. Emphasis will be placed on maintaining existing wildlife habitats and long-term improvement in the diversity and distribution of habitats. T & E species recovery will be limited to those species identified in approved recovery plans.

Alternative E

Emphasis will be placed on reconstruction priority range improvements only. Range capacity will decline over time as improvements deteriorate and are not replaced. Suitable timber areas will be managed to approximate the yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on wildlife utilizing herbaceous forage and cover habitats available when range goes to a low emphasis level. Those improvements needed to support wildlife populations will be maintained and some funding will be available for development of additional improvements. T&E species recovery will be limited to those species identified in approved recovery plans.

Alternative F

Range emphasis will be placed on reconstructing priority range improvements only. Range capacity will decline through time as improvements deteriorate and are not replaced. If conflicts with wildlife can be avoided, permittee cooperation may be used to partially sustain AUMs. Suitable timber areas will be managed to approximate yields and silvicultural prescriptions currently being applied. Wildlife emphasis will be placed on managing wildlife habitat for quality and diversity. Funding will be available for developing habitats and improvements needed to support increasing wildlife populations.

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