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Forest Service

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CUSTER NATIONAL FOREST

Appendices



APPENDIX A

PUBLIC INVOLVEMENT

APPENDICES

This document contains the Appendices supporting the analysis in the Custer National Forest Final Environmental Impact Statement for the Forest Plan.

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PUBLIC INVOLVEMENT

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I. ISSUES, CONCERNS, AND OPPORTUNITIES IDENTIFICATION PROCESS

The Custer National Forest had Land Use Plans on all but one District at the start of this planning effort. These past planning efforts in addition to RARE II, Off-Road Vehicle Management Plans, and other planning efforts all required public involvement. As a result of these past planning efforts, and also good communications with the general public, there were no scoping meetings held at the start of this planning effort.

On May 20, 1981, the Forest mailed out 1200 letters to people interested or previously involved in Forest Planning. These letters informed the public of the planning effort that the Forest was about to undertake, provided an overview of previous plans, and asked for public issues. Responses were received from 178 people across 15 states. Eighty-three were from Montana, 43 from North Dakota, 20 from South Dakota, and 32 from other states. In addition to formal public input, the Forest is involved in a large informal network of communications with Forest users. These Forest users, such as permittees and Grazing Association representatives, provide direct input on specific projects and Forest management in general.

The 178 letters were reviewed, the statements that could be carried forward for definition of issue statements were grouped, and the number of responses by statement were tabulated. The statements were evaluated on the basis of scope (area of concern), intensity (how often the subject was mentioned), and duration (is it new or has it been around for a long time).

Scope — Scope relates to how large an area, or how much of the Forest a comment applied to. If it only applied to one or two Ranger Districts, it was rated "low." If it applied to three or four Ranger Districts, it was rated "moderate." If it applied to five or more of the seven Ranger Districts, it was rated "high."

Intensity — Intensity was related to how often the statement was made or repeated in the various letters. If the statement was made nine or more times, it was rated "high." If it was made three to eight times, it was rated "moderate." If it was made one or two times, it was rated "low."

Disposition — The classification statements used to show how the various comments and replies were addressed are listed below:

- Used to develop one or more Forest issues.
- Standard Policy or Law provides direction to resolve this statement.
- Administrative decision by the District Ranger to respond to this statement and, therefore, it will be resolved before the Forest Plan is completed.

- The Forest Service has no control or authority to resolve this problem.

Using the summary of the items gleaned from the input provided by the public, the Forest Management Team met to evaluate the results. The statements were considered by the management team and prioritized based on the number of responses, scope of the statement (how many Districts were involved), the duration of the statement, and if it was within the scope of the Forest planning process to resolve the stated problem, issue, or concern. At the same time, management concerns were identified and discussed. All management concerns were either included in the issues or were resolved by Forest management direction.

In September 1983, letters were mailed to the public to solicit input on the management of roadless areas, as required by the Ninth Circuit Court decision. There were 1,200 letters sent and 57 responses were received. These responses were reviewed, summarized, and used in the reevaluation of the Roadless Resource on the Forest.

II. CONSULTATION WITH OTHERS

A. Indian Tribes

Letters were sent to the following Tribal Councils: Northern Cheyenne, Crow, Fort Peck, Standing Rock, Fort Berthold, and Sisseton. This letter sought their input on land use planning with special emphasis on American Indian Religious Freedom Act and any other areas of special interest to them. No responses were received to these letters. However, since our original effort, we have been very involved with the Low Hat Clan of the Hidatsa tribe located at Fort Berthold. The birth place of this clan is located within the boundaries of the Little Missouri National Grasslands, and this area is still used for religious practices.

B. Agencies

The Forest considered the plans of several other agencies.

State of North Dakota Fish and Game Department: The Fish and Game Department has been very involved in the Forest Plan since it was started, since it was very concerned about the management of the Little Missouri National Grasslands.

Bureau of Land Management: The BLM in North Dakota is responsible for the coal suitability study on most lands. However, within the boundary of the National Grasslands, this study is the responsibility of the Forest Service. The Forest did this study in conjunction with the BLM.

Bureau of Land Management: In Montana, the Forest coordinated with the local BLM offices on

Following is a display of how comments were categorized and used. The topics with an asterisk became issues to guide the Forest planning process.

No. Comments	Topic	Scope	Intensity	Administrative Decision	No Authority	Law or Policy	Other
29	*Grazing	H	H	—	—	—	—
26	*Mineral Development	H	H	—	—	—	—
15	*Public Access	M	H	—	—	—	—
11	*Roadless Areas	M	H	—	—	—	—
11	Fire-related	M	H	—	—	—	X
9	Off-road Vehicles	M	H	X	—	—	—
9	*Preserve Wildlife	M	H	—	—	—	—
8	*Prairie Dogs	M	M	—	—	—	—
8	Range Developments	M	M	—	—	—	X
7	Watershed Protection	M	M	—	—	X	—
7	Timber-related	M	M	—	—	—	X
6	*Noxious Weeds	M	M	—	—	—	—
6	*Dispersed Recreation	M	M	—	—	X	—
5	Wilderness	M	M	—	—	—	X
5	Cultural	M	M	—	—	X	—
4	*Coal Mining	M	M	—	—	—	—
4	*Land Exchange	M	M	—	—	—	X
3	*Pine Encroachment	L	M	—	—	—	X
3	*Fencing	M	M	—	—	—	X
3	Air Quality	M	M	—	—	X	—
3	Wood Cutting	M	M	X	—	—	—
2	*Preserve Vegetation	M	L	—	—	—	X
2	Hunting Pressure	M	L	—	X	—	—
2	Fisheries	L	L	—	—	X	—
2	T&E Species	H	L	—	—	X	—
2	*Less Mineral Development	H	L	—	X	—	—
2	L.M. Scenic River	L	L	—	—	X	—
1	*Livestock/Wildlife	H	L	—	—	—	X
1	*Unique Vegetation	H	L	—	—	—	X
1	Less Government	H	L	—	X	—	—
1	*Commodity Production	H	L	—	—	—	X
1	Multiple Use	H	L	—	—	X	—
1	Sell in Blocks	L	L	—	X	—	—
1	Pesticide	M	L	—	—	X	—
1	*Road Management	H	L	X	—	—	—
1	Grazing Fees	M	L	—	—	X	—
1	*Grazing Practices	M	L	X	—	—	—
1	*Logging/Wildlife	L	L	—	—	—	X
1	Clearcutting	L	L	—	—	X	—
1	Outfitter Fees	L	L	—	—	X	—
1	No. of Backpackers	L	L	X	—	—	—
1	Developed Recreation	L	L	X	—	—	—

several subjects including the management of the Wild Horse Range, land exchanges, and land management plans that were developed in the past.

C. Other Agency Plans Considered

There were a few other agency plans that directly affected management of National Forest System lands. However, there are a number of plans that are considered in the management of these lands. Some of the other agency and organization plans considered are as follow:

The needs and desires of the Grazing Associations were given strong consideration in the for-

mulation of the Proposed Action. These Associations represent the people that are responsible for much of the on-the-ground management that takes place on the National Grasslands. These people have lived and made their livings off these lands for a long time, and have a long-term commitment to the land. Their knowledge of what level of management is reasonable and cost efficient is the best available.

Wildlife management plans, needs, and desires, as expressed by the various State Fish and Game Departments, were considered throughout the planning process. Most of the wildlife data used to build the Forest FORPLAN Model was contributed by these State Agencies.

The guidelines of the Greater Yellowstone Managers group were used to display grizzly bear needs.

The Bureau of Land Management Resource Management Plans that are for areas adjacent to the Forest were considered. As a result of this coordination, some land exchange and exchange of management responsibilities have been identified and are being pursued.

D. Interest Groups

Meetings were held with various interest groups, as itemized below:

Western Environmental Trade Association (WETA):

Meetings were held to keep WETA informed of how we were doing our Forest Plan, and also gave an opportunity to collect additional information, since WETA provided us oil and gas information through RMOGA (Rocky Mountain Oil and Gas Association) early in the planning process. In addition, the Forest kept WETA informed of how the Forest Plan was endeavoring to respond to the Nation's needs for commodity outputs.

The North Dakota Work Group:

This group is composed of representatives from the Forest Service, State of North Dakota, Grazing Associations, and the oil and gas industry. The group meets to discuss areas of common concern, and the Forest met with the Work Group on May 11, 1982. The Forest presented the work group with information on the planning process, the proposed alternatives being considered, and how the work group could have input into the planning effort.

Theodore Roosevelt National Park:

On October 17, 1983, the Forest met with representatives of the Park to discuss the impacts of transplanting elk into the Park, and the relationship of elk and domestic livestock grazing as it relates to management of the Little Missouri National Grassland and the proposed Forest Plan.

State of Montana Governor's representatives:

On November 30, 1982, the Forest met with the Governor's Task Force for Forest Plans, and discussed the Forest's Proposed Action as formulated at that time. The major items discussed included the public involvement process the Forest used to identify public issues, the planning process, alternatives considered, and the Proposed Action as it relates to the State.

State of South Dakota Governor's representatives:

On December 9, 1982, the Forest met with the Governor's Task Force for Forest Plans and discussed the Forest's Proposed Action as formu-

lated at that time. The major items discussed included the public involvement process the Forest used to identify public issues, the planning process, alternatives considered, and the Proposed Action as it relates to the State.

State of Montana Fish, Wildlife, and Parks Department:

On September 27, 1982, Mr. Flynn, Department Director, met with Forest representatives to discuss Forest planning and some other specific local concerns.

E. Industries

The Forest has met with industry representatives a number of times. One of the major data gathering efforts the Forest undertook at the commencement of planning was to build a minerals data base that would be supported by industry. The needed information to put oil and gas yield tables in the Forest model were provided by industry. Part of these data were gathered by letter and part by the Forest Geologist going to Denver, Colorado, and meeting with various industry representatives.

On June 18, 1982, Forest representatives met with representatives of Atlantic Richfield Corporation to discuss how oil and gas was considered in the Forest model, and how to best portray the accessibility of the Forest for oil and gas development.

III. SELECTED ISSUES, CONCERNS, AND OPPORTUNITIES

A. Issues, Concerns, and Opportunities (ICO's) Addressed in the EIS

The Forest established evaluation criteria for the screening of input and for developing issues of planning questions early in the planning process. This process resulted in five major planning questions to be resolved in the Forest plan. These issues or planning questions follow:

ICO 1: AT WHAT LEVEL OF USE AND MANAGEMENT INTENSITY SHOULD LIVESTOCK BE MANAGED ON THE FOREST, CONSIDERING PUBLIC NEEDS AND DEMANDS FOR ALL RESOURCES?

Public Perception

Part of the public does not think grazing of domestic livestock should be permitted on National Forest System lands; some think more grazing should be permitted; and some think less should be permitted. There is a general desire to balance grazing use with wildlife needs and to protect the basic soil and water resources. There is also a concern by the grazing permittees that cost effectiveness is not being considered in light of the present economic situation. The intensity

of range management relates to how much development is placed in an allotment to increase the grazing capacity of an allotment. Some people do not understand that more intensive range management practices may be used both to maintain livestock numbers and to enhance wildlife habitat.

Resource Relationships

The Forest has an opportunity either to increase grazing by domestic livestock or to improve wildlife habitat, but not both, unless intensive and more expensive management practices are used. Livestock and wildlife compete for a limited resource on most of the Forest. Which demand is favored depends on the theme of the alternative.

Procedure to Resolve

Grazing by domestic livestock impacts other resources. The question to be addressed in this effort is what level of domestic livestock use is desired by grazing permittees and by other Forest users. Grazing use affects wildlife values, and the intensity of management affects cost effectiveness. To resolve this issue, livestock use varies by alternative, and the cost effectiveness of the range program is evaluated by alternative.

ICO 2: IN RESPONSE TO NATIONAL DEMANDS FOR ENERGY AND STRATEGIC MINERALS, HOW CAN THE FOREST PROVIDE FOR MINERAL EXPLORATION AND DEVELOPMENT WHILE ALSO PROVIDING FOR RENEWABLE RESOURCES?

Public Perception

Many people do not understand the role of National Forest System lands as it relates to their availability, and legal responsibility for mineral development, especially energy related minerals. The President, in his message to Congress, has stressed the importance of providing strategic minerals and energy resources from public lands. Nearly all suitable lands on the Forest are now leased for oil and gas development. The oil and gas development in the Williston Basin in North Dakota is an important producer of oil and gas at this time. Oil and gas resources are known or expected to occur under much of the Forest. These resources will probably be developed within the next 20 years or less. Many people do not feel that the nonrenewable resources of the Forest should be developed at this time, but this is not in agreement with the Administration's directions, nor with the various mineral laws.

Resource Relationships

The development of energy and strategic minerals affects other resource activities and Forest uses. Lands disturbed by development are taken out of production for the life of the development, and lifestyles are often changed because of the change from a ranching emphasis to one of com-

mercial development. Wildlife habitat is disturbed or destroyed, and range management systems are often disrupted by the development of new roads and related minerals/energy activities.

Procedure to Resolve

To resolve this issue, the effects of mineral development are displayed in the various alternatives. This in itself does not resolve the issue, but it does display the tradeoffs to range, wildlife, and dispersed recreation.

ICO 3: HOW AND WHERE WILL THE RESOURCE BASE, INCLUDING RIPARIAN (STREAM-BANK) ZONES AND WOODY DRAWS, BE MANAGED AND PROTECTED FOR WILDLIFE IN VIEW OF COMPETITION FROM OTHER RESOURCES?

Public Perception

There is a local and National concern about the management of riparian areas. On the Forest, this concern also includes the management of the woody draws on the National Grasslands and, to a lesser extent, on the National Forests. Riparian areas and woody draws are by nature more moist than the surrounding areas and, therefore, more vegetative productivity occurs. This microclimate within the grasslands area is critical to wildlife and domestic cattle, since it provides the only shade and cover to be found in some areas. It is not possible to fence these areas to exclude cattle, because the areas are generally linear in nature, and the cost of fencing for protection would be prohibitive.

Resource Relationships

As stated above, riparian and/or woody draws are critical to wildlife and cattle. The amount, type, and season of use by cattle and wildlife determines the amount of damage caused.

Procedure to Resolve

All of the controversy surrounding the management of woody draws and/or riparian areas will not be resolved. However, the various alternatives do display the results of various management strategies on these areas by showing the relationship between cattle numbers and wildlife habitats. There are many other factors that enter into these comparisons, but the relationship usually is constant.

ICO 4: WHAT ARE THE LONG-TERM PUBLIC AND RESOURCE MANAGEMENT ACCESS NEEDS AND HOW SHOULD THEY BE RESOLVED?

Public Perception

Some publics feel there is not enough public access to the Forest, and some think there are too many roads to and within the Forest. Public access to the Forest is a problem in some areas where there are blocks of National Forest System

lands with no legal public access. There are also areas that have many roads to and within the Forest. The adequacy of public access to and within the Forest, as perceived by different people, is somewhat dependent on why the person is there. Too many roads reduce the opportunity for hunting and dispersed nonmotorized recreation, but there are never too many roads when the public wants to drive out to cut wood.

Resource Relationships

Generally speaking, road access is needed for management of most renewable resources. The density of roading varies by management objective and intensity of management. Roads are often built only to remove a product or to serve a short-term need, and then closed until needed again.

Procedure to Resolve

Resource and public access needs are somewhat dependent on the management objectives of an alternative. The wide range of alternatives considered results in sizable differences in access opportunities. A transportation plan is a part of each alternative, and it portrays differences in access needs and opportunities among the alternatives.

Because of the large amount of intermingled private ownership within some areas, the opportunity to resolve this issue to everyone's satisfaction is marginal. As needs and demands intensify over time, this issue will probably become more intense.

ICO 5: WHAT IS THE LONG-RANGE NEED FOR LOW DEVELOPMENT AREAS AND HOW SHOULD THEY BE MANAGED?

Public Perception

Low Development Areas were designated in the Unit Plans in the Little Missouri National Grasslands (LMNG), and on the Ashland District. These areas were originally designated to protect their unique unroaded condition and the unique opportunities they provided for riding, hiking, and viewing. In the Little Missouri National Grasslands, these areas were already leased for oil and gas production and, at the time, the demand for development of this energy resource was low. During the oil embargo, this area received lots of attention, and drilling in LDA's became common. Some publics see the development of these previously undeveloped areas as a breach of contract with our land use plans. In actuality, it is the honoring of leases that existed when land use plans were developed.

Resource Relationships

Low development areas are unique to many areas and, as the demand for more and more outputs

from a fixed land base increases, the acres in an undeveloped condition will decrease. LDA's do provide an opportunity for people and wildlife to escape from areas of active resource development.

Procedure to Resolve

Alternatives were developed that offer a variety of management scenarios for these areas, but there will never be enough low development areas to satisfy the desires of some individuals and groups. Some alternatives focus on allowing some development of these areas while still protecting the most unique values of the areas.

B. Comments and Concerns Determined to be Outside the Forest Planning Process

Through public involvement, a number of comments were received over which the Forest Service has no control. A summary of these is given below:

Hunting pressure: The Forest Service does not control the number of licenses and permits sold by various States, but the Forest Service does influence the number of permits sold by cooperating with the various State Game Agencies. The Forest Service also indirectly affects hunting pressure by controlling access to some areas, in cooperation with these State Agencies.

Restrict minerals development: The Forest Service does not have the authority to restrict most types of locatable mineral exploration and/or prospecting except in wilderness areas. Minerals development is encouraged on National Forest lands by Congress and the President. This subject is dealt with in Issue 2.

Less planning and/or regulations: The current planning effort (this one) is required by the National Forest Management Act. Regulations are most commonly used to protect resources as required by laws and Executive Orders (such as travel restrictions to protect fragile areas or roads when they are most vulnerable to damage by misuse).

Some people have proposed that the Forest Service sell National Forest lands in one-half section blocks: The Forest Service does not have legal authority to sell National Forest lands.

C. Design of Alternatives

Alternatives were designed to be responsive to the five major ICO's (Issues, Concerns, and Opportunities) stated in Section III.A above. None of the selected issues were deferred for resolution outside the planning process, nor were the ICO's treated the same in all alternatives.

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DESCRIPTION OF THE
ANALYSIS PROCESS

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DESCRIPTION OF THE ANALYSIS PROCESS

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I. Introduction

A. Planning Problem

The Forest Service is responsible for determining how best to manage National Forest lands based on public desires and land capabilities. The Custer National Forest has a unique planning problem in that it is one of the most diverse National Forests in the United States. The Forest base lands extends from the eastern portions of the Beartooth Mountains near Billings, Montana, some 670 miles to the eastern edge of the Sheyenne National Grasslands near Fargo, North Dakota. There is a 11,894 foot difference in elevation across the Custer National Forest. It holds various amounts of land in 20 counties (7 in Montana, 4 in South Dakota, and 9 in North Dakota). The capability of the Custer National Forest to resolve issues and concerns is greatly influenced by its rolling plains, grasslands, and rugged mountains, with a wide range of growing seasons, rainfall and soil types. Fourteen percent of the Forest is currently wilderness. The remainder of the Forest supports oil and gas production, has major undeveloped coal resources, roaded and unroaded recreation including big-game hunting and viewing scenery, domestic livestock grazing, and timber harvesting. Livestock grazing is the largest traditional use of the Forest.

Public interest includes divergent viewpoints about the use of commodities such as timber, grazing and minerals, and noncommodities such as wilderness, unroaded recreation, scenery, wildlife, old growth timber and ecological diversity. The Forest's major planning goal is to provide enough information to help Forest officials determine which combination of goods and services, brought about through changes in land designations, will maximize net public benefit (as defined and discussed in Section IV A. of this Appendix). The National Forest Management Act (NFMA) and its regulations (36 CFR 219) provide the analytical framework to address this objective, and also state that the requirements of the National Environmental Policy Act (NEPA) and its regulations (40 CFR 1500-1508) must be applied in this analysis process.

B. Planning Process

The planning and environmental analysis process brings a new outlook and a new technology to National Forest land management, in several ways, principally: (1) processes formerly used to make individual resource decisions are now combined to help make integrated management decisions, and (2) new mathematical modeling techniques are used to assist in the land designation problem, including identifying the most cost-efficient pattern of land management. The 10-

step planning process is discussed in the NFMA regulations and in Chapter I of this document. Appendix B describes the analysis phase of this process including steps 3, 4, 5 and 6. The judgment phase, steps 1, 2, 7 and 8, is described in Chapters I, II, and in Appendix A. The execution phase, steps 9 and 10, is presented in the Proposed Forest Plan.

1. Inventory Data and Collect Information (Step 3)

The interdisciplinary team determined what data are necessary, based on the issues and concerns. The analysis of the management situation, formulation of alternatives and monitoring require data on resource capabilities, existing supply and demand, expected outputs, benefits and costs. Existing data are used whenever possible, but are supplemented with new data to help resolve sensitive issues or management concerns. The data sheets are on file in the Forest Supervisor's Office.

2. Analysis of the Management Situation (Step 4)

The analysis step examined resource supply and market conditions and determined suitability and feasibility for resolving issues. A land designation model (FORPLAN) was used to address a number of specific requirements, including benchmarks. Requirements included: (a) the projection of the Forest's current management program; (b) determining the Forest's ability to produce a range of goods and services from minimum management to maximum production; (c) evaluating the feasibility of reaching the national production goals (RPA Program, Outputs, Activities, and Costs) and social demands identified as issues and concerns; and (d) identifying monetary benchmarks which estimate the output mix which maximizes present net value of resources having an established market or assigned value and meeting other departure analysis requirements. (Forest Planning Record: (29) 1920.84 and 1920.85.)

3. Formulation of Alternatives (Step 5)

The information gathered during the first four planning steps was combined and analyzed to formulate alternative management strategies. These alternatives reflect a range of resource management direction. Each major public issue and management concern is addressed by one or more of the alternatives. Management prescriptions and practices were formulated to represent the most cost efficient way of attaining the objectives for each alternative. Both priced and non-priced outputs were considered in formulating the alternatives. (Forest Planning Record: (29) 1920.84 and 1920.85.)

4. Estimation of Effects of Alternatives (Step 6)

The physical, biological, economic and social effects of each alternative were estimated and analyzed to determine how each responds to the range of goals and objectives assigned by the RPA program. FORPLAN was used to estimate some of the economic and physical output effects, while other methods were used for remaining effects. The analysis includes: (a) direct effects; (b) indirect effects; (c) coordination with other Federal, State, local and Indian tribe land use plans; (d) other environmental effects; (e) energy requirements and conservation potential; (f) natural or depletable resource requirements and conservation potential; (g) historic and cultural resources; and (h) means of mitigation.

II. Inventory Data and Information Collection

A. Forest Planning Data Base

1. Ecosystems and Ecogroups

The Custer National Forest is characterized by the mapping of the ecosystems, portraying the land's capabilities.

Ecosystems consist of living and non-living components, each interacting with the others to function as an integrated system or unit. While each of the individual components, (i.e. soil, plants, water, and wildlife species) has its own significance, it is the combined effect of all the interactions that are important. It is this total complex, rather than the individual components, that governs production possibilities and limitations, defines technical problems, and determines the appropriate types and intensities of how man might use the land.

The environment of the Forest was evaluated on the basis of grouped existing ecosystems that are defined by landforms, soil productivity, vegetative types, and similar responses to management activities. This created a manageable number of analysis land units. Differences among most ecosystems are describable, but grouping was appropriate when the ecosystems tend to require similar management and produce similar outputs. Some ecosystems were not grouped because their particularities require separate analysis. Specific ecosystems are described fully in the planning records ((39) 1922.21a). Table B-1 shows the "ecogroup" combinations that were made.

2. Analysis Areas

Analysis areas are one or more ecogroup areas or parts of ecogroup areas with similarities in capa-

bility combined for the purpose of analysis in formulating alternatives and estimating various impacts and effects (FSM 1920.5). Timber ecogroups were further stratified by existing types or condition classes and then aggregated into analysis areas based on similarities in capability and economic effects. There are 347 analysis areas.

3. Production Coefficients

Resource outputs were developed by linking resource suitability and economics information to analysis areas. For example, analysis areas tentatively suitable for timber production were linked to timber type maps which in turn were linked to timber outputs. Analysis areas suitable for cattle grazing were identified with range allotment maps which had forage production estimates. Recreation coefficients represented existing levels of use and projected use and population trends. Water and sediment coefficients identify both naturally occurring and management induced erosion, but were not used in the FORPLAN model as an output. Other resource data including costs, benefits, slope, geology, and riparian areas were utilized to further refine outputs. Scheduled resource outputs and their production coefficients follow:

OUTPUTS	UNITS OF MEASUREMENT
Timber	Thousand cubic feet(MCF)
Livestock Forage	Thousand Animal Unit Months(MAUM's)
Deer	Acres of Effective Habitat
Wildlife-other(elk)	Acres of Effective Habitat
Wildlife-birds	Acres of Effective Habitat
Recreation	Thousand Recreation Visitor Days (MRVD's)
Oil	Thousand Barrels
Existing Visual Condition	Thousand Acres of Existing Visual Condition Class 4:Disturbed (MEVC-4)
Wildlife Use	Thousand Wildlife And Fish User Days (MWFUD's)

These resource outputs respond to the issues and concerns. Generally, the presence of range and minerals activities in a prescription created a response by wildlife, recreation, and visual resources. In cases where wildlife and/or recreation were being emphasized, the other resources react accordingly.

4. Suitable Lands

a. Range Suitability

Suitable range is land that is accessible or that can be made accessible to livestock, that produces forage or has inherent forage producing capabilities, and that can be grazed on a sustained yield basis under reasonable management goals. Areas that produce forage and become

TABLE B-1
ECOSYSTEM-ECOGROUP COMBINATIONS

Sheyenne National Grassland — all Physiographic Areas (see glossary)	
<i>Ecosystems</i>	<i>Ecogroups</i>
Choppy Sandhills and Savanna	Choppy Sandhills/Savanna
River Terrace	River Terrace
Mixed Grass Prairie — Dry	Prairie — Dry
Mixed Grass Prairie — Wet	Prairie — Wet
Beartooth Ranger District — Beartooth Plateau Physiographic Area	
<i>Ecosystems</i>	<i>Ecogroups</i>
Rock Outcrop-Snowfields,	Outcrop
Dry Alpine, Moist Alpine,	
Krummholz, Subalpine Meadow,	
Subalpine Forest, Rock	
Outcrop-Forest, and	
Rock Outcrop-Talus	
Lodgepole Pine, Douglas-Fir	Pine
Mountain Meadow, Streamside	Bottom
Hardwood, Aspen, and Aquatic	
Grassland	Grass
Beartooth Ranger District — Beartooth Face Physiographic Area	
<i>Ecosystems</i>	<i>Ecogroups</i>
Alpine and Steep Rocky	Outcrop
Forested	
High Timbered Plateau,	Timber
Subalpine Forest, Douglas-fir,	
and Dry Timbered Benches/Slopes	
Valley Bottoms and Aquatic	Bottoms
Foothill Grasslands	Grass
Beartooth Ranger District — Pryor Mountain Physiographic Area	
<i>Ecosystems</i>	<i>Ecogroups</i>
Subalpine Plateau/Subalpine	Subalpine
Forest	
Douglas-Fir/Outcrop Forest	Timber
Mountain Grass	Grass
Juniper-Sage/Sage-Grass and	Sage
Salt Desert Shrub	
Sloux Ranger District — All Physiographic Areas	
<i>Ecosystems</i>	<i>Ecogroups</i>
Hardwood Draws	Draws
Ponderosa Pine Bench, Ponderosa	Pine
Pine Slope, and Ponderosa Pine	
Steep	
Upland Grassland, Rolling	Grassland
Grassland, Rockland (Rubble),	
and Tabletop Grassland	
Rimrock and Rimrock Breaks	Rimrock
Ashland Ranger District — All Physiographic Areas	
<i>Ecosystems</i>	<i>Ecogroups</i>
Creek Bottom, Creek Terrace,	Bottoms
and Open Hillsides	
Outcrop	Outcrop
Grassland Parks, Upland Prairie	Grass
Grassland, Upland Prairie	
Sagebrush, and Upland Prairie	
Bunchgrass	
Dry Slope Ponderosa	Pine-dry
Moist Slope Ponderosa	Pine-moist
Grand River National Grassland — all Physiographic Areas	
<i>Ecosystems</i>	<i>Ecogroups</i>
River bottom and	Bottoms
Woody Draws	
Upland Grassland	Grass
and Rolling Grassland	
Claypan/Slick spots	Claypan
Upland Breaks	Breaks

TABLE B-1 (Continued)
ECOSYSTEM-ECOGROUP COMBINATIONS

Medora Ranger District — all Physiographic Areas*Ecosystems*

River bottom, Hardwood Draws,
and Terraces
Rolling Grassland
Upland Grassland and Toe Slopes
Upland Breaks, River Breaks,
Rockland, Hilly Scoria
Ponderosa Pine

Ecogroups

Bottoms

Grass
Slopes
Breaks

Pine

McKenzie Ranger District — all Physiographic Areas*Ecosystems*

River bottom, Hardwood Draws,
and Terraces
Upland Grassland
Rolling Grassland and Toe Slopes
Upland Breaks, River Breaks,
Rockland, and Hilly Scoria

Ecogroups

Bottoms

Grass
Slopes
Breaks

accessible as a result of timber management practices, fire, or other events may classify as suitable range. Such areas frequently are called transitory range, even though forage may be produced for 10 or more years before natural or human-caused changes terminate it.

Range suitability was determined independently of effects of past use of the range. Areas denuded of vegetation by overgrazing were classified as suitable range if they meet other suitability standards.

1) Guides and standards for classifying range suitability areas follow:

a) Site Productivity

Productivity of a site should be evaluated in pounds of herbage and browse produced annually per acre. The minimum acceptable productivity is the level below which it is not feasible or practical to graze livestock. In some areas, quality of herbage and browse may be a basis for rating productivity. When productivity is a limiting factor in suitability classification, it is essential to differentiate between low production due to inherent limitations of the site and low production due to range depletion, changing timber overstory, or current weather. For example, ranges producing small amounts of herbage and browse because of overuse or drought shall be classed as suitable, if they meet other suitability standards.

b) Soil Stability

Soil stability is the inherent ability of soils to resist erosion. It depends on several factors, principally climate, erodibility, topography, and cover. These factors are used to evaluate the erosion potential or erosion hazard (Soil Survey Procedures Handbook, FSH 2509.14, sec. 55.26.) The following factors affecting soil stability should be considered in developing suitability guides:

(1) Erodibility

Erodibility is the inherent tendency of the soil to erode without consideration of climate, topography, or cover. It is based on:

(a) The strength and size of the surface soil aggregates.

(b) Profile characteristics are such factors as texture, depth to restrictive layers, and coarse rock fragments on the surface and in the profile all of which affect infiltration, percolation, and storage of water.

(2) Topography

Slope gradient, length, roughness, shape and aspect affect erosion hazard. Long slopes build up greater heads of water than short ones; steep slopes are more subject to erosion by overland flow than are gentle slopes, because the erosion capability of overland flow increases as the rate of flow increases. The influence of slope on the free movement of grazing animals under reasonably attained levels of management should be considered in determining suitability. Frequently, degree of slope cannot, by itself, be used as a guide to suitability. Many factors besides those relating to soil may interact with slope. All pertinent factors should be considered in defining reasonable standards for slope in suitability determination.

(3) Cover

Cover consists of vegetation, litter, rock, and rock fragments. The amount, kind, and dispersion of cover determine its efficiency in protecting the soil from accelerated erosion.

c) Physical Barriers

Physical barriers include steep slopes, cliffs, brush, trees, down timber, rock, and other obstructions that restrict free movement of livestock. Ranges classified as unsuitable because of

barriers are reclassified if the obstructions are to be removed.

d) Management

The kind of livestock grazing and the management systems applied to a range may affect suitability. A change from band herding of sheep to herderless fenced pasture sheep management may result in safe use of areas previously identified as unsuitable because of risks of soil damage. Intensified management may result in the need to redefine suitability criteria.

Once range is classified as suitable, it is further defined as either primary or secondary range, according to patterns of livestock use under the current management and with existing range improvements. The definitions for primary and secondary range are as follows:

2) Primary and Secondary Range

Primary range is the part of suitable range that livestock naturally graze under current management practices. It usually includes the readily accessible areas that have available water and which will be overused before livestock significantly graze other areas.

Secondary range is that part of the suitable range that is lightly grazed or not grazed at all under existing management and improvement levels, or that is grazed significantly only after the primary range has been overused. Secondary range can be changed to primary range by changing management systems or practices or by constructing range improvements.

3) Unsuitable Range

Unsuitable range is any areas that should not be grazed by livestock because of unstable soils, steep topography, or inherent low potential for forage production.

4) Transitory Range

Transitory range is range that becomes useable or suitable as a result of partial or complete removal of forest cover by logging, fire, insects, or disease, where the management objective is to promptly reestablish the timber cover. These areas may be grazed and browsed so long as soil is not damaged and the grazing impact remains compatible with requirements and uses of other resources. Grazing and browsing capacity declines as forest cover is reestablished. Livestock grazing suitability also declines as the forest canopy closes. Primary consideration is given to maintaining satisfactory soil condition and avoiding damage to plantations and tree reproduction. Transitory range will be further refined to primary, secondary, and unsuitable for livestock grazing.

Additional information on suitability can be found in the Range Analysis Handbook (FSH 2209.21 R-1; Chapter 200).

b. Timber Suitability

Ecosystem information identified in Unit Plans and data from updating the 10-Year Timber Management Plan was used to determine timber suitability on the Forest. Nonforest land was identified as all nonforested ecosystems as defined in Unit Plans. These ecosystems were based on habitat type information where available. Others were defined by various Forest specialists as listed in the Unit Plans. Lands not capable of producing industrial wood were determined before September 30, 1982, and a breaking point of 20 cubic feet/acre/year is one of the criteria used (see 36 CFR 219.29b). Additional criteria are the following:

1) Noncommercial photo-interpretative types which occur on Douglas-fir and ponderosa pine/bunchgrass habitat types (Pfister and others, 1977).

2) Upper subalpine lands often forested, but with very slow growth and thus not capable of producing 20 cubic feet/acre/year.

Technologically unsuitable lands include those which are available and capable, but have severe regeneration problems. They are on land types with shallow limestone soils or in rockland ecosystems with little soil development. These lands are presently forested, but there is no assurance that they could ever be regenerated except by natural means over a period of 50 to 100 years.

3) Net Forest Acres and Tentatively Suitable for Timber Production.

Following is the net acreage of the Forest according to its status classification:

NET ACREAGE

Status	Net Acres
National Forest Lands	1,185,317
National Grasslands	
Cedar River	6,717
Grand River	155,370
Little Missouri	1,032,979
Sheyenne	70,180
Denbigh Purchase Unit	596
Denbigh Experimental Forest	40
Souris Purchase Unit	160
Total	2,451,359

As the above chart shows, of the 2,451,359 acres on the Forest only 1,185,317 acres are National Forest lands and available for consideration for the production of timber. By using the suitability criteria, 156,731 acres or 13 percent of the National Forest lands are considered as tentatively suitable for timber production. Table B-2 shows the breakdown of the National Forest lands (1,185,317 acres) in response to suitability for timber production. The rest of the lands that make up the Custer National Forest are either National Grasslands acquired by the Bankhead-Jones

TABLE B-2
IDENTIFICATION OF LANDS TENTATIVELY SUITABLE
FOR TIMBER PRODUCTION

	Wilderness Acres	+	Other Acres	=	Total Acres
1. Total Acres Under Administration	339,841		1,266,042		2,451,359
2. Total National Grasslands					1,265,346
3. Purchase Units & Exper. Forest					796
4. Total net Forest area	339,841		845,476		1,185,317
5. Nonforested land	223,911		281,528		505,439
6. Forest land at least 10% stocked with trees	115,930		563,948		679,878
7. Forest land not capable of producing industrial wood	54,650		245,778		300,428
8. Productive Forest land	61,280		318,170		379,450
9. Land withdrawn from timber production by Congress	61,280				61,280
10. Available productive Forest land:					
a. Not technologically suited for timber production					
1) Irreversible resource damage			20,402		20,402
2) Restocking not assured			141,037		141,037
b. Tentatively suitable for timber production			156,731		156,731

Farm Tenant Act or acquired for other specific purposes and not available for timber production.

c. Other Lands

Resource data were used to determine acres tentatively suitable for management practices. Nearly all areas were considered suitable for some form of recreation and some type of wildlife use. Known existing uses were the major criteria for determining suitability for these activities. Roadless area size, proximity to wilderness, and evidence of human activities were used to determine wilderness suitability.

5. Designation and Scheduling

The range and timber condition classes of existing vegetation are used to determine management activities that could be applied over time for the various benchmarks and alternatives. The FORPLAN model is used to designate and schedule management activities.

6. Monitoring

Forest planning data provided a base from which changes could be measured and also were used to monitor implementation activities.

7. Plan Implementation Programs

Biological and physical data developed for Forest Planning will be used to form the basis for plan implementation programs. The data will be organized in a data base which will allow new information to be added and updates to be made in the future.

B. Sources of Data

Sources of existing inventory data used in the analysis are as follows:

1. Forest Service Manual, Management Information Handbook (FSH 1309.11) provides definitions for outputs, activities, effects and other information.

2. Vegetative habitat types were inventoried in conjunction with unit plans completed from 1973 to 1980. The process is currently documented in Forest Habitat Types of Montana (Pfister and others, 1977) and in the various Background Reports for Unit Plans.

3. The timber compartments are subdivisions of watersheds and as identified in the timber inventory system provide timber production information (map base, 1979). Timber outputs were derived from the timber inventory. Timber types or size and condition classes were developed by Forest Service personnel.

4. Administrative boundaries are delineated on various Custer National Forest Maps.

5. Recreation Information Management (RIM) and State Comprehensive Outdoor Recreation Plans (SCORP) were used to determine present use. Projections from SCORP and Regional Office guidelines are used to project future trends.

6. Forage production was based on the Forest Service Range Allotment Management Information System (RAMIS) data and Unit Plan Background Reports.

7. Geologic information was developed from MGS Williston Basin Symposium (1978), Brown (1961), Poldervaart (1957), Simons (1979), Gries (1983), Gerhard (1982), Rice, Dudley, & Shurr (1980), Carlson (1983), and Anderson & Bluemle (1982).

8. Mineral potential (oil and gas) was developed through cooperation with the Rocky Mountain Oil and Gas Association (RMOGA), independent contacts with industry representatives, and information from industry and government publications.

9. Background sediment and management activity sediment were predicted from stream sediment levels and from a stockpond sedimentation study on the Forest. The stream sediment data came both from Forest Service sampling and from

US Geological Survey (USGS) records. Predictions of sediment changes due to management activities were based on the Lolo and Gallatin National Forests' methods. These used the results of timber and roading activities as well as information from a number of studies identifying changes in runoff and sedimentation as a result of rangeland management. (Studies are described and referenced in Rangeland Hydrology, 2nd Edition, 1981. Society for Range Management, Range Science Series, Edited by Gilbert H. Reid.)

10. Background water and water yields resulting from management activities were predicted by using the Lolo and Gallatin National Forests' water yield methods relating to timber and roading activities. Additional information also came from the Soil Conservation Service, USGS and Forest Service stream flow and runoff prediction. On National Grasslands, predictions were based on the USGS information and Forest Service observations of streamflow, stockpond volumes and on differences in runoff volumes from badlands versus vegetated prairie land.

11. The visual resource situation was analyzed by using the Existing Visual Condition inventory (R-5 FSM 2383.4, Supplement 113, Measure of accomplishment, May, 1983). The visual objectives established in Unit Plans by Agricultural Handbook 462 were incorporated into management prescriptions.

12. The values and costs for resources were determined by a variety of methods. Stumpage value for timber was based on bidder transaction evidence for 1974 to 1980; timber price trends from Haynes and Adam publication (1980); other resource values (price trends) from 1980 RPA reports (Beasley, 1978); and costs were developed by Forest personnel as documented in Planning Record: (44) 1922.24b). Animal Unit Month values were derived through the Economic Research Service and based on the Range Budget Analysis Method (Gee, 1981).

III. The Forest Planning Model (Including FORPLAN)

A. Overview

The Forest Planning Model was the framework within which the analysis takes place. Resource information, scientific studies, and the FORPLAN linear program were the major components of the Forest planning model.

FORPLAN is a linear programming computer model designed to analyze numerous possible management activities, practices, and resource outputs on specific land areas in order to select an optimal set of solutions capable of meeting various management constraints and goals (objective functions).

The specific land areas or analysis areas, (see Part C of this section), were delineated by characteristics which have a fairly uniform response to management activities, costs, and benefits. Management activities and practices (prescriptions) were assigned to analysis areas based on their suitability (see Part D of this section). These represented specific combinations of activities and outputs. Each of the 347 analysis areas has from 3 to 14 management prescriptions available to it.

Resource outputs or production coefficients were developed for each combination of analysis area and management prescription (see Part F of this section). Based on these coefficients, FORPLAN selected those management prescriptions for analysis areas which produced the goods and services that optimized the objective function, after meeting all constraints.

Once the purpose and details of an alternative were determined, a set of constraints was developed to represent that alternative. These constraints were implemented by constraining management prescriptions available to analysis areas, constraining the access to analysis areas for timber harvest in a particular decade, or constraining the outputs from analysis areas or groups of analysis areas. The conditions set by the constraints must be satisfied before the objective function is optimized. The analysis of the benchmarks and alternatives utilized the same objective function, to maximize present net value, except in resource maximum benchmarks, where the objective was to maximize an individual resource output. The model simultaneously meets all constraints while designating resources in a way that produces the most economic value.

B. Analysis Process and Analytical Tool

Analysis leading to the utilization of the FORPLAN model included designing management prescriptions, assigning management practices and constraints to prescriptions (Planning Record: (42) 1922.24a), developing management costs for each practice and predicting resource outputs and benefits (Planning Record: (42) 1922.24b). Predicted outputs included timber yield, range forage, sediment, roads, deer, elk, and grouse capacity, recreation, wildlife and fishing user days, barrels of oil, and disturbed visual condition (EVC-4). However, not all of these resource outputs were modeled through the FORPLAN model.

Cost efficiency was considered in developing a realistic and flexible set of management prescriptions. Professional judgment and experience played a major role in the balancing of resources by prescription. FORPLAN was used to examine the comparative cost efficiencies of prescriptions. Minimum management requirements for

soil, air, and water were met in all prescriptions. The multiple use prescriptions considered the minimum management requirements for all species at the development level, and outputs were adjusted accordingly.

Practices which required special analysis included roading in riparian and woody draw areas, logging method and rotation age. A growth prognosis model was used to develop existing and regenerated managed and unmanaged timber yield tables (Wykoff and others, 1981).

Major decisions that resulted from the preliminary analysis included the following that apply to all prescriptions:

1. The prescriptions, besides producing market and nonmarket goods and services included the assurance of meeting minimum management requirements.

2. All roads will be built and maintained to Forestwide standards and guidelines. Variations occur by land types. Riparian and woody draw areas will receive special consideration.

3. Timber sales will be planned and administered to Forestwide standards and guidelines, including coordination with cultural, visual, wildlife, soil, and water resources.

4. Timber slash disposal and reforestation activities will take place in all timber harvest prescriptions.

5. Access controls to protect wildlife will be considered.

6. Livestock improvements and maintenance will be included in all appropriate prescriptions.

FORPLAN was utilized to provide the basis for optimal land designation and management prescription selection and scheduling for each analysis area. This process resulted in selection of the most cost-efficient management prescriptions and proposed land uses that met a given set of constraints and an objective function of maximizing present net value.

The FORPLAN model limitations required several analyses to be made outside the linear model. Three major analyses included a coal study to determine the potential of development and to what extent coal could be developed, employment and income analysis, and a wildlife population determination. The Forest developed a local input/output version of the IMPLAN model to analyze the effects upon employment and income within the local zones of influence. Based on the outputs from the FORPLAN model by benchmarks and alternatives, an additional social impact assessment (Planning Record: (42) 1922.24c) and identification of baseline socioeconomic conditions were developed for each local area. The wildlife population determination

used outputs from the FORPLAN model to develop deer and elk populations.

C. Identification of Analysis Areas

The rationale for delineating and describing analysis areas in the FORPLAN model follows (Planning Records: (40) 1922.21b):

1. Level 1 Criteria

Level 1 identifies Ranger Districts on the Forest. Because of the wide geographic area of the Forest, it was necessary to look at outputs and effects by Ranger District. Some issues and management concerns were not as important on some portions of the Forest as on others, and using Ranger Districts as Level 1 identifiers gives the Forest a better opportunity to look at these differences. Level 1 identifiers were as follow:

Identifier Code	Ranger District	Acres	Analysis Areas
SHEYEN	Sheyenne	70,180	12
BEARTH	Beartooth Ranger District	586,242	141
SIOUX	Sioux Ranger District	162,931	28
ASHLND	Ashland Ranger District	436,208	31
GRNRIV	Grand River Ranger District	162,087	6
MEDORA	Medora Ranger District	527,892	79
MCKENZ	McKenzie Ranger District	505,087	50

2. Level 2 Criteria

Level 2 identifiers were physiographic areas on the Forest. These were developed in June of 1982 and then revised in 1983 to include roadless areas. Essentially Roadless Areas (ERA's) were identified in the process for the Little Missouri National Grasslands and these areas were carried forward into the RARE II process and the current review of roadless areas.

Following are the Level 2 identifiers;

Identifier Code	Location Description	Acres	Analysis Areas
SHEYRV	Sheyenne River	18,123	5
HANHIL	Hankinson Hills	2,860	2
PRAIR	Prairie	49,197	5
BTHFAC	Beartooth Face	57,512	17
BTHPLT	Beartooth Plateau	9,522	13
RO1362	Lost Water Canyon (RARE II)	9,800	3
A/BWL	Absaroka-Beartooth Wilderness	339,841	7
SDAK	South Dakota	73,529	13
MONT	Montana	89,402	15
ASHLND	Ashland	396,210	9
RO1370	Cook Mountain (RARE II)	11,699	8
RO1373	Tongue River Breaks (RARE II)	16,600	6
GRDRVR	Grand River	162,087	6
BDLND	Badlands	296,982	14
ROLPRA	Rolling Prairie	294,290	13
INCL	Inclusions	196,547	16
RL1DAU	Twin Buttes (RARE II)	9,000	6
PPIN	Ponderosa Pine Area	37,153	8
RL1DAK	Bell Lake ERA (RARE II)	10,860	6
RL1DBE	Wannagan ERA (RARE II)	5,880	6
RL1DBI	Kinley Plateau ERA (RARE II)	20,273	6
RL1DBJ	Bullion Buttes ERA (RARE II)	18,450	8
RL1DBL	Strom Hanson ERA (RARE II)	15,320	6

Identifier Code	Location Description	Acres	Analysis Areas
RL1DBD	Ash Coulee ERA (RARE II)	27,782	6
RL1DBB	Maggie ERA (RARE II)	31,299	10
RL1DAX	Lone Butte ERA (RARE II)	13,121	4
BPRERA	Bennie Peer ERA	14,964	5
RL1DAP	Horse Creek ERA (RARE II)	14,446	4
RL1DAO	Cheney Creek ERA (RARE II)	9,572	5
RL1DAY	Bennett Cottonwood ERA (RARE II)	17,040	6
ROCKCR	West Fork Rock Creek	19,996	9
PRYOR	Pryor Mountains	64,156	15
LINECR	Line Creek Face	4,940	12
RA1363	Wapati Mountain Plateau (RARE II R01363)	7,501	8
RB1363	Wapati Mountain Face (RARE II R01363)	13,205	8
RC1363	Burnt Mountain (RARE II R01363)	9,895	9
RD1363	East Rosebud (RARE II R01363)	1,195	4
RA1366	Woodbine & West (RARE II R01366)	2,910	3
RB1366	Fishtail (RARE II R01366)	16,101	11
RC1366	East Rosebud (RARE II R01366)	1,349	6
RA1371	Meyer Mountain (RARE II R01371)	19,155	9
RB1371	Wolverine Pass East (RARE II R01371)	2,146	1
RC1371	Wolverine Pass N. East (RARE II R01371)	1,529	1
RO1911	Line Creek Plateau	20,680	5
RO1912	Beartooth (RARE II)	1,180	1
RO1913	Rock Creek (RARE II)	400	2
RO1372	King Mountain (RARE II)	11,699	8

This criteria responded to the roadless area issue by providing a means to designate inventoried roadless areas to either roadless or developmental management prescriptions. The criteria also responded to the wildlife and fish issue because roading is a part of the issue.

3. Level 3 Criteria

Level 3 identifiers were Ecogroup identifiers. Also included in Level 3 were the identifiers for Unsuitable Rangelands (U-). The unsuitable range is developed by utilizing a percentage of the suitable area that did not meet the criteria of suitability. These areas were small tracts of land that in most cases were not mapable.

Abbreviation	Description	Acres	Analysis Areas
CHSHSA	Choppy Sandhills/Savanna	13,118	3
RIVTER	River Terrace	100	1
MGPDRY	Mixed Grass Prairie — Dry	19,863	2
MGPWET	Mixed Grass Prairie — Wet	36,234	3
ALPINE	Alpine (unsuitable range)	74,824	15
TIMBER	Timber	25,207	40
BOTTOMS	Bottoms	151,659	35
GRASS	Grass	612,081	38
SUBALP	Subalpine	4,070	2
SAGE	Sage	5,713	1
A/BWIL	A/B Wilderness	339,841	7
DRAWS	Draws	6,577	2
PINE	Pine	17,332	11
RIMROC	Rimrock(unsuitable range)	16,332	2
OUTCRP	Outcrop(unsuitable range)	54,252	4

Abbreviation	Description	Acres	Analysis Areas
DRYPIN	Dry Slope Ponderosa Pine	128,751	4
MPPINE	Moist Slope Ponderosa Pine	20,502	11
BREAKS	Breaks	176,780	22
SLOPES	Slopes	325,961	21
CLYPN	Claypan	16,000	1
OPHILL	Open Hillside	82,767	4
DUMMY	Dummy Timber AA's(not used)	—	0
U-CHSH	Unsuitable Range in Choppy Sandhills/Savanna	276	1
U-RIVT	Unsuitable Range in River Terrace	533	1
U-MGPW	Unsuitable Range in Mixed Grass Prairie — Wet	56	1
U-TIMB	Unsuitable Range in Timber	92,838	1
U-BOTT	Unsuitable Range in Bottoms	16,909	13
U-GRAS	Unsuitable Range in Grass	30,827	16
U-PINE	Unsuitable Range in Pines	11,723	11
U-BREA	Unsuitable Range in Breaks	138,452	18
U-SLOP	Unsuitable Range in Slopes	30,079	15
U-CLYP	Unsuitable Range in Claypan	970	1

4. Working Group Criteria

The Work Group identifiers identified existing vegetative types common to the area as follow:

Abbreviation	Description	Acres	Analysis Areas
DOUGFR	Douglas-fir(not used)	—	0
MIXCON	Mixed Conifer	91,510	74
DFRPRY	Douglas-fir — Pryor Mountains	56,361	13
DPPINE	Dry Slope Ponderosa Pine	128,751	4
MPPINE	Moist Slope Ponderosa Pine	20,502	11
PPINE	Ponderosa Pine	27,555	20
OTHER	All Other Vegetation	2,125,948	225

5. Land Class Criteria

The Land Class identifier was used to identify two characteristics of the analysis area: big game winter range and mineral potential for oil and gas development. The oil and gas potential was based on industry's rating of 1 (low) to 4 (high).

Abbreviation	Description	Acres	Analysis Areas
WRM1	Winter Range, Mineral Potential 1 (low)	633	2
WRM2	Winter Range, Mineral Potential 2	26,138	13
WRM3	Winter Range, Mineral Potential 3	280,906	65
WRM4	Winter Range, Mineral Potential 4 (high)	174,312	98
NWRM1	Non-winter Range, Mineral Potential 1 (low)	69,547	10
NWRM2	Non-winter Range, Mineral Potential 2	73,064	5
NWRM3	Non-winter Range, Mineral Potential 3	841,098	44
NWRM4	Non-winter Range, Mineral Potential 4 (high)	984,929	110

6. Condition Class Criteria

The Condition Class identified the existing timberstand size for lands tentatively suitable for timber management as follows:

Abbreviation	Description	Acres	Analysis Areas
OS/US	Overstory/Understory	33,622	18
MSAW	Mature Sawtimber	57,885	30
ISAW	Immature Sawtimber	52,434	27
STAG	Stagnated Stands	17,176	14
POLE	Poles	18,774	15
S/S	Seedling/Sapling	6,571	12
NST	Non-stocked (Commercial Forest)	95	1
NCF	Non-stocked (Noncommercial Forest)	544,339	40
NF	Nonforest	1,719,731	190

The following special areas were included in the range and timber suitable and unsuitable lands. Outputs and activities in the analysis areas containing these special areas were adjusted if needed to maintain the integrity of these areas.

- Research Natural Areas
- Developed Recreation Sites
- National Landmarks
- National Recreation Trails
- North Country Trail
- Red Lodge-Cooke City Highway

D. Identification of Prescriptions

1. Overview

NFMA regulations define management prescriptions as "management practices and intensities selected and scheduled for application on a specific area to attain multiple-use and other goals and objectives" (36 CFR 219.3). Generally, a management prescription is a set of treatments or practices to develop and/or protect some combination of resources on a particular piece of land.

The interdisciplinary team reviewed the public issues and management concerns and used professional judgment and RPA Program targets for guidance in developing multiple-use management prescription goal statements. The goal statements and related issues for each prescription are as briefly defined below:

a. Minimum Level Unconstrained

The level of management that does not necessarily meet all Legal, legislative, or administrative commitments, but does meet the minimum management requirements for soil, air and water. Some outputs were produced without management (i.e., recreation, wildlife, water).

b. Minimum Level

The level of management that meets legal commitments plus most administrative policies. Management was designed to protect key resource values. At this level of management, some managed outputs decreased over time.

c. Current Management

The level of management that maintains the present balance of resource outputs associated with

current levels of funding as they related to present management emphasis and intensity.

d. Current Management Unit Plan

The level and direction of management that produces the resource outputs identified by the unit plans.

e. Moderate Level

The level of management that protects and maintains resource values. At this level of management, some outputs may increase over time, but increased outputs were not the goal of this management level.

f. Moderate Level Unit Plan

The level of management that would be the same as moderate level except that the Unit Plan direction for Low Development Areas were maintained.

g. Range Multiple-Use Maximum

The level of management that emphasizes range outputs, recognizing that a managed loss of some other resource outputs would occur. Conflicts between range and other resources were resolved in favor of range within legal and/or administrative policy constraints.

h. Range Maximum

The level of management that maximizes range outputs without regard to other resource outputs. Some resource legal requirements and administrative policies were met.

i. Minerals Multiple-Use Maximum

The level of management that emphasizes minerals outputs, recognizing that a managed loss of some other resource outputs would occur.

j. Minerals Maximum

The level of management that maximizes mineral outputs without regard to other resource outputs. Some resource legal requirements and administrative policies were met.

k. Wildlife Multiple Use Maximum

The level of management that emphasizes wildlife outputs, recognizing that a managed loss of some other resource outputs occurs.

l. Wildlife Maximum

The level of management that maximizes wildlife outputs without regard to other resource outputs. Some resource legal requirements and administrative policies were met. The emphasis under this prescription was to maximize wildlife outputs.

m. Timber Management — Moderate

The level of management that emphasizes timber harvest to protect and maintain the timber resource value as well as other resource values. At this level of management, some outputs increased over time, but increased outputs was not the management goal.

n. Timber Maximum

The level of management that maximizes timber outputs without regard to other resource outputs. Some resource legal requirement and administrative policies were met.

o. Timber Current Management

The level of management that provides the current level of timber harvest, timber stand improvement, and other cultural treatments needed to protect other resource values.

p. Forage—Timber Multiple Use Maximum

The level of management that emphasizes timber harvest to enhance the production of forage, recognizing that a managed loss of some resource outputs would occur.

q. Winter Range — Timber Multiple Use Maximum

The level of management that emphasizes timber harvest to enhance wildlife winter range values, recognizing that a managed loss of some resource outputs would occur.

r. Wilderness Minimum Level

The level of wilderness management that meets legal commitments plus most administrative policies. Management was designed to protect the basic resource values.

s. Wilderness Moderate Level

The level of wilderness management that would protect and maintain resource values as defined by law and administrative policy. At this level of management some outputs increase over time, but increased outputs was not the management goal.

t. Wilderness Multiple Use Maximum

The level of wilderness management that protects and maintains resource values as defined by law and administrative policy. Some managed outputs may increase over time, but increased outputs was not the management goal. Emphasis was placed on dispersed recreation, by increasing informational signs to aid in dispersing users to decrease the impact on certain areas.

u. Wilderness Current Management

The level of wilderness management that maintains the present emphasis and intensity on resource outputs, and produces outputs as projected into the future.

v. Wilderness Unit Plan

The level of wilderness management that is outlined under unit plans and the Interim Absaroka-Beartooth Management Plan. This level meets legal, legislative, and administrative commitments. Quality of management exceeded current levels.

w. Wilderness Unconstrained Minimum

The level of wilderness management that would not necessarily meet legal, legislative, or administrative commitments. Some outputs were produced without administration (i.e., wildlife, water). Domestic livestock grazing does not occur.

x. Recreation Multiple Use Maximum

The level of management that emphasizes recreation outputs, recognizing that a managed loss of some outputs would occur. Conflicts between recreation and other resources were resolved in favor of recreation, within legal and/or administrative policy constraints.

y. Recreation Maximum

The level of management that maximizes recreation outputs without regard to other resource outputs. Some resource legal requirements and administrative policies were met.

2. Design of Management Prescriptions

Management practices, standards and guidelines were developed and assigned to each of the above prescription goal statements by interdisciplinary work groups.

These management prescriptions were designed to:

- Project the current program to evaluate implications
- Explore resource potentials
- Explore opportunities to improve efficiency
- Explore opportunities to resolve issues and concerns
- Be responsive to national needs (RPA).

Practices were developed and assigned based on current research, feasibility, cost efficiency, potential for resource damage and ability to meet minimum management requirements. The management standards and guidelines needed to accomplish the goals of a prescription included the minimum management requirements and the mitigation measures and resource coordination that are required by existing laws, regulations and policy. This applied to all prescriptions except the resource maximums in which only the soil, air and water minimum management requirements were met.

Special resource opportunities and unacceptable resource impacts were determined by ecosystem to provide for protection or enhancement of the opportunity. As a result of this process, 25 management prescriptions with a broad range of emphasis, intensities, practices, standards and guidelines were defined. Some of the prescriptions emphasized a specific resource such as the timber, wildlife, range, minerals, and wilderness. Intensities of management varied by prescription, increasing the range of choices available to the FORPLAN model.

Completed prescriptions were reviewed, discussed and revised as necessary by the Forest management team and the interdisciplinary team to make sure there was a full range of prescriptions to be responsive to the issues, concerns, and opportunities.

3. Prescription Purpose, Criteria, and Assumptions

Management prescriptions were used in the Forest's FORPLAN model and resulted in environmental effects as well as outputs. Each prescription was identified or described by a management emphasis (first word) and a management intensity (second word). The abbreviation for each of these prescriptions is in parentheses following each word description that appears below. The implications of each prescription upon each resource is disclosed, as well as the rationale for developing the cost of each prescription. While costs varied by prescription and Ranger District, benefits varied by Ranger District and within Ranger Districts. These differences can be somewhat attributed to the wide physical distances of the Ranger Districts that are widely scattered over three states. Further detailed discussion of costs and benefits can be found in Part IV of this document, Cost-Efficiency and Net Public Benefit. Table B-3 displays the comparison of prescriptions against standards and guidelines as they relate to resources.

a. Minimum Level Unconstrained (Min Unc)

1) Purpose — To represent the level of management that does not necessarily meet all legal, legislative, or administrative commitments. Some outputs would be produced without management (i.e., recreation, wildlife, water).

2) Criteria and Assumptions

Timber — There are no timber management practices; however, the timber resource will be protected from illegal harvest.

Range — Livestock grazing is not permitted. This tends to allow overused areas and plant vigor to improve. On good productive ranges, range value will decrease due to the development of wolf plants (ungrazed plants). Grazing trespass is likely to occur and enforcement is allowed. Incidental recreational livestock use occurs as well as wildlife use. Limited maintenance occurs on existing capital investments only as needed to protect the basic resources.

Noxious Weeds — No effort is made to control noxious weeds.

Wildlife — Residual nesting cover for prairie grouse and the quality of habitats in the woody draws is expected to improve due to the removal of livestock. At some time the quality will decrease as perennial grasses decline in vigor

and as the bottoms become overgrown. This will not be expected to be widespread until after twenty-five years.

On the Sioux District, the lack of timber harvest will initially protect the whitetail deer winter range. As timber stands mature and become susceptible to disease and insect attacks, the risk of widespread loss to fire and/or disease is increased. This could remove the entire winter range in one catastrophic incident. Net effect is a stable provided capacity (PC) for wildlife for 25-30 years.

On the Beartooth and Ashland Districts the lack of timber harvests will not have an immediate impact on deer habitats. On the Ashland District the open dry pine stands and bottoms provide open feeding areas, and the more densely timbered north slopes provide thermal cover. On the Beartooth District the lack of harvest results in an increased risk of a major conflagration.

Since no new gas and oil leases will be issued, mineral impacts will not occur in unleased areas. However, reduced administration in leased areas will result in increased impacts in those areas.

Recreation — Recreation is allowed to occur. All developed sites are closed, allowing only dispersed recreation activities.

Minerals — No new oil and gas leases are issued and only minimal administration of existing developments occur. This has an adverse affect on the national demand for energy resources. The lack of administration affects the visual resource because oil and gas related facilities may not be rehabilitated or maintained to minimize visual impacts. The lack of administration may also result in increased erosion and sediment load.

Mineral activities under the 1872 Mining Law continue, but substantial time delays in obtaining approved operating plans occur.

Visual Quality — Visual quality is affected only to the extent that existing oil and gas leases develop. Acres in EVC-4 Disturbed class decrease as nature recovers the previously impacted areas. This process outweighs the continuity development of the oil and gas leases.

WFUD's — Wildlife and fishing user days vary as wildlife populations change, although the recreation use trend is upward.

Soil, Air, and Water — Due to decrease in activities, soil, air, and water are not impacted except for that which naturally occurs. Ground cover overall increases. This reduces sedimentation and erosion, thus improving soil and water conditions.

Cost Rationale — Timber costs are minimal and reflect only the costs needed to protect the timber resources against illegal harvest. Range costs are those associated with general administration of resource protection, including limited maintenance

**TABLE B-3
PRESCRIPTION COMPARISONS**

Standards and Guidelines	Prescriptions		
	Minimum Unconstrained	Minimum Level	Current Current
Timber Mgmt.	No harvest but resource protected for future	No harvest but resource protected for future	Maintain current Mills at current operational capacity
Range Mgmt.	No grazing Trespass controlled Recreation use continued but monitored	Management direction would be season long grazing Stocking rates adjusted to protect riparian zones and woody draws	Current level of stocking Intensive grazing systems with little emphasis on nonstructural developments
Range Cap.Inv.	Limited maintenance	Capital investments maintained	Structural development to meet allotment management plan (AMP) Capital investments maintained
Noxious Weeds	No control	Maintenance on sensitive areas to meet legal requirements	Active program to control weeds in most areas and hold infestation at or near current levels
Wildlife Mgmt.	Temporary positive effect on deer and elk until range deteriorates Habitat in woody draws improved Prairie grouse habitat improved temporarily	Temporary positive effect on deer and elk until range deteriorates Value in woody draws would decrease over time Increase in upland bird nesting habitat	Meet wildlife goals and objectives Mitigate effects of other resource programs
Mineral Mgmt.	No new leases issued No production or development	No new leases issued Limited production and development on existing leases	New leases issued and renewed Stipulations developed to protect key resource values
LDA Mgmt.	Maintained	Maintained No surface occupancy after cut-off dates on existing leases	Maintained No surface occupancy after cut-off dates on existing leases
Recreation Mgmt.	Developed sites closed No signing or maintenance	Developed sites closed Limited field administration, signing, maintenance and law enforcement	Management of dispersed and developed Maintenance limited to high use areas Emphasis on dispersed use
Visual Mgmt.	No regards to visual quality	No regards to visual quality	Integration of visual management objectives
Soil, Air, & Water	State standards would be met Soil and water quality would improve	State standards would be met Quality would decrease Soil compaction would increase in bottoms	State standards would be met Sediment would increase Soil compaction decrease in some areas of livestock concentration Increased runoff

Standards and Guidelines	Prescriptions		
	Current Unit Plan	Moderate Level	Moderate Unit Plan
Timber Mgmt.	Extensive management on a non-declining yield Limited timber stand improvement	Harvest to meet demands Little or no precommercial thinning	No regulated harvest in Riding and Hiking areas but salvage sales would occur as needed
Range Mgmt.	High intensity of management Increase AUM's by 5-10% over current Some emphasis on non-structural improvements	Emphasis on a moderate level of management Improve distribution through intensive systems Little emphasis on nonstructural improvement	Emphasis on a moderate level of management Improve distribution through intensive systems Little emphasis on nonstructural improvement

TABLE B-3 (continued)
PRESCRIPTION COMPARISONS

Standards and Guidelines	Prescriptions		
	Current Unit Plan	Moderate Level	Moderate Unit Plan
Range Cap.Inv.	Range betterment funds (RBF) and Conservation Practices (CP) funds would increase to meet AMPs	RBF and CP programs held at current levels for structural improvements	RBF and CP programs held at current levels for structural improvements
Noxious Weeds	Control infestations near current levels Emphasize research on leafy spurge	Control infestations near current levels	Control infestations near current levels
Wildlife Mgmt.	Meet wildlife goals and objectives Mitigate effects of other resource programs	Meet wildlife goals and objectives Mitigate effects of other resource programs Meet surveys and monitoring schedules Management plans for problem habitats by 1990	Meet wildlife goals and objectives Mitigate effects of other resource programs Improvement of woody draws and more residual nesting cover available
Mineral Mgmt.	Leases issued and renewed Stipulations to protect other key resources values	Leases issued and renewed Stipulations to protect other key resource values	Leases issued and renewed Stipulations to protect other key resource values
LDA Mgmt.	Maintained with no exploratory oil and gas wells after surface occupancy cut-off date	Eliminated-Oil and gas development allowed	Maintained with no exploratory oil and gas wells after surface occupancy cut-off date
Recreation Mgmt.	Emphasis dispersed and developed Special recreation areas Areas maintained and developed to encourage use and quality experience Enforcement at a high level also field administration	Maintain high use sites at full service Low use sites at reduced service Moderate level of experience Field administration and law enforcement on key areas	Maintain high use sites at full service Low use sites at reduced service Moderate level of experience Field administration and law enforcement on key areas Limited activities in LDAs
Visual Mgmt.	Established VQO's will be met Acres of maximum modification will be limited	Not restrictive Retention is not assigned other VQO's are used in management decisions	Not restrictive except in LDA's where they will be met including preservation and retention
Soil, Air, & Water	State standards would be met Ground cover improved Water volumes decrease by 2 to 3% Soil and water better protected than at current level	State standards would be met Maintained at current levels Some future increase in water and soil quality	State standards would be met Maintained at current levels Some future increase in water and soil quality

Standards and Guidelines	Prescriptions		
	Range Multiple-Use	Range Maximum	Minerals Multiple-Use
Timber Mgmt.	Designed to increase transitory range and reduce encroachment onto grass ecosystems	Timber harvest would be to benefit range management and increase carrying capacity	Maintain current mills Road development through oil and gas activities
Range Mgmt.	High intensity of management Emphasis on structural and non-structural improvements Forage allocation 90% to livestock	High intensity of management Emphasis on structural and non-structural improvements Forage allocation 100% to livestock	High intensity of management to minimize the effect of oil and gas development Short term reductions expected
Range Cap.Inv.	RBF and CP funds increase to meet AMP's Fertilization and pine encroachment control	RBF and CP funds increase to meet needs of fertilization, site conversion, interseeding et. al	RBF and CP increased to decrease impacts of oil and gas development
Noxious Weeds	Control infestations and reduce current levels Emphasize research on leafy spurge	Control infestations and reduce current levels	Control infestations and maintain current levels

**TABLE B-3 (continued)
PRESCRIPTION COMPARISONS**

Standards and Guidelines	Prescriptions		
	Range Multiple-Use	Range Maximum	Minerals Multiple-Use
Wildlife Mgmt.	Coordinate to protect or mitigate impacts on key areas Improvement activities limited to key wildlife habitats	Coordination to protect threatened and endangered species Other wildlife values would be reduced or eliminated	Coordinate to protect or mitigate impacts on wildlife through pre-planning by identify areas of conflicts prior to development
Mineral Mgmt.	Leases issued and renewed Stipulations to protect resource values Mitigate surface impacts	Leases issued and renewed Stipulations to protect resource values Limited surface occupancy	Full and rapid development Preplanning to minimize effects on resource values
LDA Mgmt.	Eliminated as needs to meet the objectives of range management	Eliminated to allow full development of range programs	Eliminated to allow oil and gas development
Recreation Mgmt.	Emphasis dispersed and developed Maintain high use sites at full service Low use sites at reduced service Enforcement at a high level also field administration	Operate developed sites at reduced service level Quality of experience expected to be low Field administration and law enforcement on key areas	Maintain high use sites at full service Low use sites at reduced service Moderate level of experience Field administration and law enforcement on key areas Conflicts will be mitigated
Visual Mgmt.	VQO's will not be restrictive mostly partial retention, modification and maximum modification	Not restrictive No VQO's assigned	Not restrictive Limited maximum modification Emphasis placed on rehabilitation
Soil, Air, & Water	State standards would be met Soil and water protected Runoff volumes reduced and quality improved	State standards would be met	State standards would be met Increase in sediment due to activities Water quality slightly decreased Air quality decreased

Standards and Guidelines	Prescriptions		
	Minerals Maximum	Wildlife Multiple-Use	Wildlife Maximum
Timber Mgmt.	Maintain current mills Road development through oil and gas activities	Timber harvest would be designed to benefit wildlife habitats	Harvest designed solely to meet wildlife goals and objectives
Range Mgmt.	High intensity of management to minimize oil and gas impacts Short term reduction in grazing capacity	Intensive management systems designed to enhance wildlife habitat Forage 60% residual, 30% livestock, 10% wildlife	Limited livestock grazing outside of riparian, woody draws, and breaks ecosystems Criteria for utilization based on wildlife needs
Range Cap.Inv.	RBF and CP would be used to implement AMP's and maintain capacities	RBF and CP programs would be reduced to maintenance level	RBF and CP programs would be reduced to maintenance level
Noxious Weeds	Control infestations near current levels Program increase due to roading activities	Control infestations near current levels	Control infestations near current levels
Wildlife Mgmt.	Wildlife habitat would decrease as more areas become developed by oil and gas activities	Meet wildlife goals and objectives Developments and vegetation manipulation to enhance habitats Monitoring, surveys, and management plans for wildlife developed	Meet wildlife goals and objectives Agressive development programs to improve and develop habitat Inventories, monitoring surveys, and management plans for most wildlife species developed

TABLE B-3 (continued)
PRESCRIPTION COMPARISONS

Standards and Guidelines	Prescriptions		
	Minerals Maximum	Wildlife Multiple-Use	Wildlife Maximum
Mineral Mgmt.	Applications processed quickly Stipulations to meet minimum legal requirements	Leases issued and renewed Stipulations to protect other key resource values Seasonal surface occupancy restrictions	Development allowed outside key wildlife areas No surface occupancy in riparian, woody draws, rimrocks, ecosystems, slopes over 30% and key wildlife areas Restrictions on roads
LDA Mgmt.	Eliminated development allowed	Maintain areas but develop and improve wildlife habitat through cultural practices	Maintain areas but develop and improve wildlife habitat through cultural practices
Recreation Mgmt.	Maintain high use sites at full service Low use sites at reduced service Low level of experience Encourage use Enforcement at a moderate level to protect areas Limited field administration	Maintain high use sites at full service Low use sites at reduced service Moderate high level of experience Field administration and law enforcement on key areas Respect key wildlife habitats	Eliminate recreational sites in wildlife areas Direct uses away from key habitats Level of moderately high Administration and law enforcement on key areas
Visual Mgmt.	No VQO's will be established	VQO's established as many are consistent with wildlife need in most areas	No VQO's will be established
Soil, Air, & Water	State standards would not be met Soil condition would degrade Runoff would increase as will sediment Decreasing water and air quality	State standards would be met Maintained at current levels Some future increase in water, air, and soil quality Increased ground cover and infiltration	State standards would be met Maintained at current levels Some future increase in water, air, and soil quality Increased ground cover and infiltration
Standards and Guidelines	Prescriptions		
	Timber Moderate	Timber Maximum	Timber Current
Timber Mgmt.	Meet demands and timber silvicultural practices No precommercial thinning	Intensive timber program on all lands capable, suitable and available for production	Maintain current mills Some harvest for other resource needs Standard silvicultural practices
Range Mgmt.	High intensity of management Emphasis on structural improvements Management to use transitory range	Reduced grazing where impact to timber Some seasonal restriction on grazing to accommodate timber production	Coordination with timber practices to allow use of transitory range
Range Cap.Inv.	RBF and CP funds needed to meet AMP's	RBF and CP funds limited to maintenance of improvements in timbered areas	RBF and CP held at current levels
Noxious Weeds	Control infestations and reduce current levels	Control infestations and reduce current levels	Control infestations and maintain current levels
Wildlife Mgmt.	Meet wildlife goals and objectives Mitigate effects of resource programs Meet surveys and monitoring schedules Management plans for problem areas by 1990	Coordination to protect threatened and endangered species Other wildlife values would be reduced or eliminated	Coordination to protect and mitigate impacts on wildlife through management plans
Mineral Mgmt.	Leases issued and renewed Stipulations to protect resource values Mitigate surface impacts	Leases issued and renewed Stipulations to protect resource values Limited surface occupancy within suitable timber habitat types	Leases issued and renewed Coordination in road development for multi-resource access
LDA Mgmt.	Eliminated as needs to meet other resource demands	Eliminated as needed to meet other resource demands	Selected ones maintained as roadless areas

TABLE B-3 (continued)
PRESCRIPTION COMPARISONS

Standards and Guidelines	Prescriptions		
	Timber Moderate	Timber Maximum	Timber Current
Recreation Mgmt.	Emphasis dispersed and developed Maintain high use sites at full service Low use sites at reduced service Enforcement at a high level also field administration	Emphasis dispersed and developed Maintain high use sites at full service Low use sites at reduced service Restrict use in timber areas Enforcement on key areas also field administration	Management of dispersed and developed Maintenance limited to high use areas Emphasis on dispersed Timber access roads used to help disperse users
Visual Mgmt.	VQO's management objectives mostly partial retention and modification	Not restrictive no VQO's objectives	Intergration of visual management
Soil, Air, & Water	State standards would be met Soil and water protected Runoff volumes reduced and quality improved	State standards would be met Soil and water condition lowered Runoff volumes increased in logging areas Reduction in air quality	State standards would be met Downward trend continued for soil and water Air quality will remain about the same
Standards and Guidelines	Prescriptions		
	Forage-Timber Multiple-Use	Winter Range-Timber Multiple-Use	Wilderness Minimum Level
Timber Mgmt.	Harvest designed to improve forage production Thinning spacing would be greater	Timber management would be to enhance areas needed for game winter range	No timber harvest allowed
Range Mgmt.	High intensity of management Emphasis on structural improvements Management to use transitory range	Transitory range would be solely for wildlife allocation in areas that have been classified as game winter range	Minimum level of management at reduced stocking rates to protect wilderness values
Range Cap.Inv.	RBF and CP funds needed to meet AMP's and take advantage of transitory range	RBF and CP funds limited to maintenance of improvements in timbered areas	RBF and CP funds limited to maintenance of existing improvements No new improvements
Noxious Weeds	Control infestations and reduce current levels	Control infestations and reduce current levels	Control infestations and maintain current levels
Wildlife Mgmt.	Wildlife values would not be emphasized Threaten and endangered species habitat protected	Wildlife plans would direct timber activities to enhance winter range character Threaten and endangered species habitats improved	Limited coordination to protect and mitigate impacts on wildlife by wilderness use
Mineral Mgmt.	Leases issued and renewed Stipulations to protect resource values Mitigate surface impacts	Leases issued and renewed Stipulations to protect resource values Limited surface occupancy Seasonal restrictions and possibly no surface occupancy	No mineral activity allowed
LDA Mgmt.	Eliminated as needs to meet other resource demands	Eliminated as needed to meet other resource demands	Not applicable
Recreation Mgmt.	Recreation activities would not be excluded but the quality of the experience would decrease due to stocking levels	Recreation would be discouraged to avoid conflicts with wildlife Seasonal use may be restricted	Management visibility low Signs would not be replaced Shorter seasons of use for trails and trailheads Only serious problems would be acted upon
Visual Mgmt.	VQO's management objectives partial retention, modification limited maximum modification	VQO's are retention, partial retention and modification if not restrictive to wildlife management	No visual management objective

TABLE B-3 (continued)
PRESCRIPTION COMPARISONS

Standards and Guidelines	Prescriptions		
	Forage-Timber Multiple-Use	Winter Range-Timber Multiple-Use	Wilderness Minimum Level
Soil, Air, & Water	State standards would be met Soil and water condition lowered Runoff volumes increased in logging areas No change in air quality	State standards would be met Soil and water condition lowered Runoff volumes increased in logging areas No change in air quality	State standards would be met Air quality maintained at current levels Soil and water conditions improved were needed
Standards and Guidelines	Prescriptions		
	Wilderness Multiple-Use	Wilderness Current	Wilderness Unit-Plan
Timber Mgmt.	No timber harvest	No timber harvest	No timber harvest
Range Mgmt.	Level of grazing at or slightly below current levels Systems implemented to enhance wildlife values No structural improvement	Level of grazing at or slightly below current levels Systems implemented to enhance wildlife values No structural improvement	Level of grazing at or slightly below current levels Systems implemented to enhance wildlife values No structural improvement
Range Cap.Inv.	RBF and CP funds as needed to meet AMP's and maintenance	RBF and CP funds as needed to meet AMP's and maintenance	RBF and CP funds as needed to meet AMP's and maintenance
Noxious Weeds	Control infestations and maintain current levels	Control infestations and maintain current levels	Control infestations and maintain current levels
Wildlife Mgmt.	Meet wildlife goals and objectives Maintain wilderness values	Meet wildlife goals and objectives Maintain wilderness values	Meet wildlife goals and objectives Maintain wilderness values
Mineral Mgmt.	No activity allowed	No activity allowed	No activity allowed
LDA Mgmt.	Not applicable	Not applicable	Not applicable
Recreation Mgmt.	Emphasis dispersed and quality experience High wilderness ranger visibility High level of maintenance, public contact, and information	Emphasis dispersed Adequate field administration and public contact to assure a quality experience	Emphasis dispersed and quality experience High wilderness ranger visibility High level of maintenance, public contact, and information
Visual Mgmt.	VQO's management objective is preservation	VQO's management objective is preservation	VQO's management objective is preservation
Soil, Air, & Water	State standards would be met Soil and water protected	State standards would be met Soil and water protected	State standards would be met Soil and water protected
Standards and Guidelines	Prescriptions		
	Wilderness Unconstrained Minimum	Recreation Multiple-Use	Recreation Maximum
Timber Mgmt.	No activity	Timber harvest will be designed and managed to enhance recreational opportunities	Timber harvest will be designed and managed to enhance recreational opportunities
Range Mgmt.	No Activity	Emphasize intensive systems to minimize grazing-recreation conflicts Improvements designed to minimize conflicts	Emphasize intensive systems to minimize conflicts if not resolved then livestock removed
Range Cap.Inv.	No activity	RBF and CP funds for development of AMP's to protect recreational areas	RBF and CP funds for development of AMP's to protect recreational areas
Noxious Weeds	Control infestations and maintain current levels	Control infestations and reduce current levels	Control infestations and reduce current levels

TABLE B-3 (continued)
PRESCRIPTION COMPARISONS

Standards and Guidelines	Prescriptions		
	Wilderness Unconstrained Minimum	Recreation Multiple-Use	Recreation Maximum
Wildlife Mgmt.	Meet wildlife goals and objectives Mitigate effects of resource programs	Meet wildlife goals and objectives Mitigate effects of resource programs	Meet wildlife goals and objectives Mitigate effects of resource programs
Mineral Mgmt.	No activity allowed	Development allowed outside key areas No surface occupancy in riparian, woody draws, rimrocks, ecosystems, and slopes over 30% Restrictions on road development	Development allowed outside key areas Surface occupancy prohibited or restricted in key areas
LDA Mgmt.	Not applicable	Maintained as needed to meet other resource demands	Eliminated as demands increase for motorized recreation if potential exists
Recreation Mgmt.	Emphasis dispersed Quality of experience lessened as field administration and maintenance will be limited	Emphasis dispersed and developed Maintain sites at full service Maintenance and service levels would be high High quality of experience	Emphasis dispersed and developed High level of maintenance and services Maintain sites at full service
Visual Mgmt.	VQO's management objective is preservation	VQO's objectives are retention, partial retention, and limited modification	VQO's objectives are retention and partial retention
Soil, Air, & Water	State standards would be met Soil and water protected Runoff volumes reduced and quality improved	State standards would be met	State standards would be met

Standards and Guidelines	Prescriptions	
	Wilderness Moderate Level	
Timber Mgmt.	No activity	
Range Mgmt.	Level of grazing at or slightly below current levels Systems implemented to enhance wildlife values No structural improvement	
Range Cap. Inv.	No activity	
Noxious Weeds	Control infestations and maintain current levels	
Wildlife Mgmt.	Meet wildlife goals and objectives Mitigate effects of resource programs	
Mineral Mgmt.	No activity allowed	
LDA Mgmt.	Not applicable	
Recreation Mgmt.	Emphasis dispersed Quality of experience lessened as field administration and maintenance will be limited	
Visual Mgmt.	VQO's management objective is preservation	
Soil, Air, & Water	State standards would be met Soil and water protected Runoff volumes reduced and quality improved	

nance on capital investments and control of trespass livestock. Recreation costs are associated with a small degree of administration to protect resources. Included under this is the cost to protect and evaluate cultural resources. Mineral costs are keyed to the Forest's responsibility in reissuing leases, special use permits, processing proposals and applications, and administering existing operations to protect resource values. Other dollar costs are for support, protection and administration to the minimum needed to protect the basic resources of the National Forest lands. The wildlife program does not have any associated costs.

b. Minimum Level (Min Min)

1) Purpose — To represent the level of management that meets legal commitments plus most administrative policies. Management is designed to protect key resource values. At this level of management, some managed outputs decrease over time.

2) Criteria and Assumptions

Timber — There are no timber management practices; however, the timber resources are protected from illegal harvest.

Range — The management strategy developed over time is season-long use due to the deterioration of structural and nonstructural range improvements. The RBF (Range Betterment Fund) and the CP (Conservation Practices) program are implemented only to a very low level. The bottoms, woody draws, and riparian ecosystems are the most severely impacted because of the natural tendency for livestock to concentrate in these areas.

Noxious Weeds — Noxious weeds are controlled to meet state and county requirements.

Wildlife — On the Sioux District, the lack of timber harvest initially protects the whitetail deer winter range. However, as the stands mature and become susceptible to disease and insect attacks, the risk of widespread loss to fire and/or disease is increased. This may remove the entire winter range in one catastrophic incident. Net effect is a stable provided capacity (PC) for wildlife for 25-30 years.

On the Beartooth and Ashland Districts, the lack of timber harvests does not have an immediate impact on deer habitats. The open dry pine stands, bottoms, and private land provide open feeding areas and the more densely timbered north slopes provide thermal cover. On the Beartooth District the lack of harvest results in an increased risk of a major fire.

The wildlife habitat provided Forestwide by the riparian and woody draw ecogroups is subject to impacts by the livestock grazing under season long use. Livestock concentration in these areas

results in physical damage to shrubs and trees, increased utilization of forage adjacent to this ecogroup and increased soil compaction. This results in a decline in the quality and quantity of this ecogroup for wildlife.

Conversely, by concentrating livestock in bottom areas, a reduction of use occurs on the upland areas and other areas away from a source of water. As a result, more residual nesting cover for sharptail grouse and prairie chickens is available. Without grazing or fires over time, these areas lose their vigor and the stands open up with widely separated plants; however, this is not expected to become a widespread occurrence within 25 years.

Recreation — All developed recreation sites have a reduced season of use resulting in a 2 to 5% decrease in use. Field administration of all activities is limited and maintenance, signing, and law enforcement nearly eliminated.

Minerals — No new oil and gas leases are issued and only minimal administration of existing developments occurs. The lack of administration affects the visual resource because oil and gas related facilities may not be rehabilitated or maintained to minimize visual impacts. The lack of administration may also result in increased erosion and sediment load.

Mineral activities under the 1872 Mining Law continue, but the response time to proposed operating plans is probably affected by reduced budgets and personnel.

All existing Essential Roadless Areas would be maintained as well as those areas inventoried during the RARE II evaluation, and no new surface occupancy is allowed after the cut-off date for oil and gas exploration.

Visual Quality — Visual quality would only be affected to the extent that oil and gas leases develop. The acres in EVC-4 Disturbed decrease through time as nature reclaims previously disturbed areas. This outweighs the new impacts from existing lease development.

WFUD's — Wildlife and fishing user days vary as wildlife populations change, although the recreation use trend is upward.

Soil, Air and Water — With bottom ecosystem deterioration causing downward trends in rangeland, soil losses increase because of poor ground cover in these areas. The major problems arise where condition dropped from fair to poor. In these areas, runoff water volumes increase by some 6 or 7% over the first 25 years and sediment production increases. Soil compaction occurs mostly in the riparian zones.

Cost Rationale — Timber costs are minimal and reflect only costs needed to protect the resource. Range costs are those associated with protection

of the resource under a season long grazing strategy, and with maintaining capital investments. Recreation costs are associated with resource protection and limited field administration of dispersed recreation activities. Developed sites have a limited season of use and maintenance is non-existent. Cultural resource evaluation and protection costs are included under recreation. Mineral costs are based on management of leasing, special use permits, processing proposals and applications, and administration of existing operations to protect resource values. Other dollar costs are to protect the basic resources, support limited programs, and administer legal obligations. The wildlife program at this level does not have any associated costs.

c. Current Management (Cur Cur)

1) Purpose — To represent the level of management that maintains the present balance of resource outputs associated with current levels of funding as they relate to present management emphasis and intensity.

2) Criteria and Assumptions

Timber — Timber harvest is suitable to maintain existing dependent mills, with planned increases over the next few years. Some harvest is the result of range and wildlife needs. All timber management practices under this prescription take place to the extent that the activity is funded.

Range — Range management is maintained at a moderate level. Inventory and plans are developed to meet targets and demands. The overall number of permitted AUM's is held at or near current levels. The RBF and CP programs therefore remain at current levels. Structural improvements and intensive grazing systems are developed to emphasize livestock distribution. Little emphasis is placed on non-structural improvements.

Noxious Weeds — Noxious weeds are treated to control infestations at or near current levels.

Wildlife — Wildlife management is designed mainly at meeting Forest wildlife targets and mitigating the effects of other resource programs on wildlife.

Recreation — Recreation management includes both dispersed and developed recreation. Maintenance is limited to high use areas. Emphasis is on dispersed use recreation when possible.

Minerals — Oil and gas leases are issued with stipulations to protect other key resource values. Leases are not issued within the proposed wilderness areas. The range and wildlife habitat are affected as acres are removed from forage production by oil and gas related facilities. An additional wildlife impact occurs from increased roading and related activities. The visual resource is affected as development expands. Timber pro-

duction is also affected by acres being taken out of production by construction of facilities, but access constructed for oil and gas activities increases the opportunities for timber management. Mineral activities under the 1872 Mining Law continue. All existing Low Development Areas are retained and no exploratory oil and gas wells are allowed after the surface occupancy cut off dates.

Visual Quality — Acres in this class of visual condition fluctuate as mineral developments are built, used, and rehabilitated. Other resource activities have limited visual impacts because visual management is integrated in these activities. The VQO's range from Retention to Modification, with most activities striving to meet Partial Retention.

WFUD's — Wildlife and fishing user days vary as populations change. However, the fluctuations in recreation trends are upward. The existing trend is used in this prescription.

Soil, Air, and Water — Timber and oil and gas activities create sedimentation and run-off volumes, although these impacts are recognized as acceptable. Areas with range allotment management plans create less soil compaction and better vegetative conditions than do areas without plans.

Cost Rationale — Timber costs are associated with timber harvest and sale preparation as the sale is measured by acres and by harvested thousand cubic feet. Also included are costs for site preparation for both natural and artificial regenerating timber stand improvement, and other cultural treatments. Range costs are those under current management practices, such as planning inventories, administration, capital investment (Range Betterment and Conservation Practices funds), noxious weed control, and analysis and maintenance of existing improvements. Recreation costs are those associated with current management, including protection of resources, maintaining of capital investment, field administration, law enforcement, trail construction and maintenance, signing program, and full service developed sites. Cultural resources are funded to the level to meet all demands of inventories on projected projects, leases and rights-of-way. Mineral work load costs are associated with the manpower needed to do a quality and timely job of processing leases, project work plans, and site locations, as well as the costs of adequate administration of leases and permit compliance. Other dollar costs are at the level needed to provide the quantity and quality of needed support to the impacted resources and to provide for the inventory and protection of the resources of the Forest. Wildlife costs are associated with the level of management and capital investment need to enhance habitat values and mitigate impacts to wildlife values by other resources.

d. Current Management Unit Plan (Cur Unit)

1) Purpose — To represent the level of management that would produce the resource outputs identified by the unit plans.

2) Criteria and Assumptions

Timber — Timber is managed on a non-declining yield program, although this is accomplished with a small amount of timber stand improvement.

Range — Range management is moderately high. Management direction is to increase AUM production by 5-10% over current levels. This is accomplished by implementing intensive management systems, improving livestock distribution, and increasing forage production through non-structural range improvements. The RBF and CP programs are implemented to current levels.

Noxious Weeds — Noxious weeds are treated to hold infestations to as near current levels as possible. Continued emphasis is placed on research for the control of leafy spurge.

Wildlife — Wildlife management is designed mainly to meet Forest wildlife targets and to mitigating the effects of other resource programs on wildlife.

Recreation — Dispersed and developed recreation are managed with equal emphasis. Special recreation areas (riding and hiking and wilderness areas) are maintained and facilities are built to encourage use and sustain high quality experiences. Field administration and law enforcement is high.

Minerals — Oil and gas leases are issued with stipulations to protect other key resource values. Leases are not issued within the proposed wilderness areas. The range and wildlife habitats are affected as acres are removed from forage production by oil and gas related facilities. Additional wildlife impacts occur from increased roading and related activities. The visual resource is affected by oil field development and facilities. Access constructed for oil and gas activities increases opportunities for timber management. Mineral activities under the 1872 Mining Law continue. All existing Low Development Areas are retained and no exploratory oil and gas wells are allowed after the surface occupancy cut off dates.

Visual Quality — Visual quality objectives (VQO's) as identified in Unit Plans are achieved. Visual management is well integrated into all resource activities. VQO's are established for the Ashland, Beartooth and Sheyenne Ranger Districts and are met by this prescription. They include all VQO's, but the acres of maximum modification are limited. The remaining districts have Unit Plan guidelines that are interpreted as Retention, Partial Retention, and Modification. Acres continue

to accumulate in EVC Class 4, but at a lesser rate than in some other prescriptions.

WFUD's — Wildlife and fishing user days vary as wildlife populations change. However, the recreation trend is upward and this prescription encourages greater wildlife use.

Soil, Air, and Water — Vegetative ground cover improves by a small amount and runoff water volumes decrease by 2 to 3 percent in the first 25 years.

Cost Rationale — Timber, range, recreation, mineral and wildlife costs are the same as the Current Level prescription.

e. Moderate Level (Mod Mod)

1) Purpose — To represent the level of management that protects and maintains resource values as defined by law and administrative policies. At this level of management, some outputs may increase over time, but increasing outputs is not the goal of management.

2) Criteria and Assumptions

Timber — Timber management is designed to harvest timber, but little or no precommercial thinning would be done.

Range — Emphasis for range management is at a moderate level. AUM production is held at or near current levels. The CP and RBF programs are held to near current levels of funding. Emphasis is placed on improving livestock distribution through implementing intensive grazing systems with improved water developments. Little emphasis is placed on non-structural improvements.

Noxious Weeds — Noxious weeds are treated to hold infestations at or near current levels.

Wildlife — Wildlife surveys and monitoring are done on a scheduled basis and management plans are developed by 1990 for problem habitats.

Recreation — Dispersed recreation support facilities (trails and trailheads) are maintained. High use developed sites are maintained at full service, while low use sites are maintained at reduced service levels. Field administration and law enforcement occur at key areas.

Minerals — Oil and gas leases are issued with stipulations that would protect key resource values. Leasing within the proposed wilderness is not allowed. Mineral activities under the 1872 Mining Law continue. Existing Low Development Areas are eliminated and oil and gas exploration and development are allowed.

Visual Quality — The acres accumulating in EVC Class 4 reflect the limited emphasis on visual impact. This is due primarily to mineral developments and to some other resource activities that have visual impacts. VQO's are not particularly restrictive. Retention is not assigned, but the

remaining VQO's, (Partial Retention, Modification, and Maximum Modification) are used across the Forest.

WFUD's — The hunting, fishing, and nature study activities continue, but management of the activities is moderate. Wildlife populations are less abundant, and fish stocking and study of the Forest are not encouraged.

Soil, Air, and Water — Soil, air, and water quality are maintained at current levels. With improved livestock distribution, soil and water quality would increase slightly.

Cost Rationale — Timber, range, recreation, mineral, wildlife and other costs are the same as in the Current Level prescription.

f. Moderate Level Unit Plan (Mod Unit)

1) Purpose — To represent the level of management that is the same as Moderate Level, except that the Unit Plan direction for Low Development Areas is maintained. The following descriptions show only the changes in Low Development Area management from Moderate Level.

2) Criteria and Assumptions

Timber — There is no regulated harvest under this prescription on the Riding and Hiking areas, but salvage sales occur as needed. No timber harvest is feasible in the Essentially Roadless Areas.

Range — Emphasis for range management is at a moderate level. AUM production is held at or near current levels. Existing range improvements are maintained and new ones are allowed if they aid in livestock distribution.

Noxious Weeds — Noxious weeds are treated to hold infestations at or near current levels.

Wildlife — With improvement of woody draws under range management practices, wildlife habitat will also improve, and with increased ground cover, grouse will benefit because of residual nesting cover.

Recreation — Recreation use is generally low in these areas. There are limited management activities and developed sites are not allowed. Dispersed recreation facilities, such as trails, signs and parking lots, are allowed in the Riding and Hiking areas.

Minerals — Existing Low Development Areas are maintained and no exploratory wells are allowed after the surface occupancy cut off dates. The areas are re-leased for oil and gas development with no surface occupancy stipulations.

Visual Quality — Due to the lack of management activities in the Low Development Areas (LDA's), visual quality tends to remain nearly unchanged. When an activity is implemented, the visual impact is the major concern. Mitigation measures are taken to maintain the natural appearing

landscape. VQO's are Preservation and Retention.

WFUD's — Motorized activities will not occur in the LDA's. Wildlife-related activities are allowed to occur, although support facilities (trails, signs, information) are minimal. Field administration of recreation use is limited.

Soil, Air, and Water — Soil, air, and water quality are maintained at current levels. With improved livestock distribution, soil and water quality will increase slightly.

Cost Rationale — Timber costs in the LDA's are minimal, except for salvage sale preparation. Range costs are those under current management practices such as planning inventories, administration, capital investment (although limited on the LDA's), noxious weed control, and analysis and maintenance of existing improvements. Recreation costs are limited due to minimal maintenance. Field administration is necessary to maintain integrity of the special ERA classification. Cultural resources are funded to the level to meet all demands of inventories on projected projects, leases and rights-of-way. Mineral work load costs are to be associated with the manpower needed to do a quality and timely job of processing leases, project work plans, and site locations, as well as for proper administration of leases and project compliance. Other dollar costs are at the level needed to provide the quantity and quality of needed support to the impacted resources and to provide for the basic inventory and protection of the resource base of the Forest. Wildlife costs represent the work load to analyze the very few impacting activities from other resources.

g. Range Multiple-Use Maximum (Rg MU)

1) Purpose — To represent the level of management that emphasizes range outputs, recognizing that a managed loss of some other resource outputs occurs. Conflicts between range and other resources are resolved in favor of range, within legal and/or administrative policy constraints.

2) Criteria and Assumptions

Timber — Timber harvesting would be designed to increase transitory range and reduce timber encroachment onto grass ecosystems.

Range — Range management emphasizes intensive management systems using both structural and non-structural range improvements. The available forage is allocated 90% to livestock use and 10% to wildlife. Wildlife needs are considered in allotment management plans, and in a few key wildlife areas range management is designed to enhance wildlife habitat.

Noxious Weeds — New infestations are put under control and current acres are reduced. Emphasis

is placed on leafy spurge research.

Wildlife — Coordination continues to protect or mitigate impacts to key wildlife areas. The emphasis on other areas under this prescription is livestock production, with most conflicts resolved in favor of livestock. This is expected to result in a loss of effective acres on most grazed lands. Habitat improvement activities will be generally limited to key wildlife areas and ungrazed lands.

Recreation — Developed recreation sites are operated at the full service level. Recreation management is not emphasized, but is not necessarily in conflict with range management.

Minerals — Oil and gas leases are issued with stipulations to protect other resources, and emphasis is placed on mitigating any surface impacts to primary range.

Visual Quality — The visual impacts of structural and non-structural range improvements accumulate in the EVC Class 4 as the location and density becomes range becomes obvious. Integration of visual management is limited so as not to restrict range management. VQO's include Partial Retention, Modification, and Maximum Modification.

WFUD's — As wildlife and fish habitat are impacted, opportunities for hunting and fishing decrease. Total use increases at a lesser trend in this prescription. Nature study is managed similarly to recreation.

Soil, Air, and Water — Soil, air and water are well-protected under this intensive range management system. Runoff water volume is reduced and its quality improved.

Cost Rationale — Timber and range costs are the same as in the Current Level prescription. Recreation costs are those associated with current management, including protection of resources, maintaining of capital investment, necessary field administration and law enforcement in high use areas, limited trail maintenance, and full service on facilities. Cultural resources are funded to the level to meet all demands of inventories on projected projects, leases and rights-of-way. Mineral work load costs are associated with the manpower needed to do a quality and timely job of processing leases, project work plans, and site locations. Costs of administration of leases and project compliance are also included. Other dollar costs are at the level needed to provide the quantity and quality of needed support to the impacted resources and to provide for the basic inventory and protection of the resource base of the Forest. Wildlife costs are associated with the level of management and capital investment needed to coordinate wildlife needs with range management, and to mitigate the impacts on key wildlife values.

h. Range Maximum (Rg Max)

1) Purpose — To represent the level of management that maximizes range outputs without regard to other resource outputs, except to meet some legal requirements and administrative policies.

2) Criteria and Assumptions

Timber — Timber harvest is designed to increase transitory range.

Range — Range management emphasizes intensive management systems. Both structural and non-structural range improvements are used to increase forage and improve utilization. All available forage is allocated to livestock use.

Noxious Weeds — A very active program to control noxious weeds is implemented to increase range carrying capacity. Current acreages of noxious weeds are reduced and new infestations are quickly controlled or eliminated.

Wildlife — Concessions are not made for wildlife values except to protect threatened and endangered species. The quality and quantity of wildlife habitats will decline due to this single-use philosophy.

Recreation — Recreation is expected to continue at current levels, as range maximization and recreation use do not necessarily conflict. Capital investment of facilities is protected.

Minerals — Oil and gas leases are issued with stipulations to protect the other resources and to limit surface occupancy on primary range.

Visual Quality — This prescription creates many additional acres in EVC-4 category since no visual management is integrated. No VQO's are assigned.

WFUD's — The opportunity for wildlife-related recreation is drastically reduced as habitat is impacted. The increasing trend of these uses declines sharply due to these impacts.

Soil, Air, and Water — Minimum state and Federal standards would be met.

Cost Rationale — Timber costs are the same as Current Level prescription. Range costs are those under current management practices such as planning inventories, administration, capital investment (Range Betterment and Conservation Practices funds for the development of structural and non-structural improvements), noxious weed control, and analysis and maintenance of existing improvements. Additional range costs are fertilization, site conversion, interseeding, and pine or brush encroachment control. Recreation costs are those associated with current management including protection of resources, maintaining of selected capital investment, trail maintenance, and reduced service levels. Cultural resources are

funded to the level to meet all demands of inventories on projected projects, leases and rights-of-way. Mineral work load costs are associated with the manpower needed to do a quality and timely job of processing leases, project work plans, and site locations as well as for proper administration of leases and project compliance. Other dollar costs are at the level needed to provide the quantity and quality of needed support to the impacted resources and to provide for the basic inventory and protection of the resource base of the Forest. Wildlife costs are for the protection of threatened and endangered species.

i. Minerals Multiple-Use Maximum (Min MU)

1) Purpose — To represent the level of management that emphasizes minerals outputs, recognizing that a managed loss of some other resource outputs would occur. Emphasis is placed on preplanning potential oil development areas and on rehabilitation of disturbance acres.

2) Criteria and Assumptions

Timber — Timber management does not change from current direction. However, roads are developed by the oil industry that could decrease the cost of timber harvest. Regulated and unregulated sales occur along road and pipeline rights-of-way developed by oil and gas development.

Range — Intensive range management systems are emphasized where economically feasible, to minimize the impacts of oil and gas exploration and development. Some short-term reductions in livestock grazing are expected due to oil and gas activity. Conflicts between minerals and range are generally resolved in favor of minerals.

Noxious Weeds — Noxious weed infestations are controlled to not exceed current acres.

Wildlife — Through preplanning potential oil development areas, major consideration for wildlife is possible and mitigation measures are identified.

Recreation — Recreation does not necessarily conflict with minerals management, and most conflicts are mitigated. Management is similar to Moderate Level.

Minerals — This prescription allows for full and rapid development of the oil and gas resource while minimizing the effects on other resources through total project design. Wildlife, cultural, visual, range, and other values are inventoried, evaluated, and considered in the project plan. All Low Development Areas are eliminated, and leasing for oil and gas is allowed in the proposed wilderness areas.

Conflicts between minerals and other resources are resolved in favor of minerals, within legal and/or administrative policy constraints. This prescription provides for a staffing level that can

preplan mineral development in high potential areas so the response time on industrial requests for development will be rapid. Preplanning allows for development of transportation plans to facilitate development of road systems that will serve all resources.

Visual Quality — Acres in EVC-4 classification accumulate as mineral development progresses. Visual management is integrated into mineral activities with the emphasis on rehabilitation. VQO's are Partial Retention, Modification, and limited Maximum Modification.

WFUD's — The opportunity for wildlife-related recreation is proportional to the extent that habitat impacts are avoided or mitigated. In most cases, the activities are upward in trend.

Soil, Air, and Water — Surface disturbances are controlled and monitored to assure that runoff water meets state water quality standards. There is some increase in sediment production due to construction and associated activities. Water quality is lowered a small amount. Air quality is lowered in some areas as development continues and excess natural gas is flared.

Cost Rationale — Timber, range, and recreation costs are the same as Current Level. Mineral work load costs are associated with the manpower needed to do a quality and timely job of processing leases, project work plans, and site locations, as well as for proper administration of leases and project compliance. The increased cost under this emphasis is the development of plans for areas of expected oil and gas development. Other dollar costs are at the level needed to provide the quantity and quality of needed support to the impacted resources and to provide for the basic inventory and protection of the resource base of the Forest. Wildlife costs are associated with the level of management and capital investment needed to integrate habitat concerns into predevelopment plans and mitigate habitat impacts.

j. Minerals Maximum (Min Max)

1) Purpose — To represent the level of management that maximizes mineral outputs without regard to other resource outputs, except to meet some legal requirements and administrative policies.

2) Criteria and Assumptions

Timber — Timber management does not change from current direction. However, roads developed by the mineral activity may decrease the cost of timber harvest. Timber harvest will occur along road and pipeline rights-of-way developed by oil and gas development.

Range — Where oil development impacts cannot be mitigated, grazing levels are sharply reduced to protect soil and water resources. This is considered to occur on all lands with a potential for oil

and gas development. In other areas range management and grazing levels continue at current levels.

Noxious Weeds — Because surface disturbance is greater due to mineral development, the acres of noxious weeds are expected to increase. The control program is increased likewise to meet state requirements for noxious weed control.

Wildlife — Concessions are not made to wildlife concerns other than to protect T&E species. The quality and quantity of wildlife habitat will decrease due to this single-use philosophy.

Recreation — Recreation values are not considered during mineral development. Use may increase as development continues and local populations increase.

Minerals — With emphasis on oil, adequate Forest staffing is provided to insure full and rapid response time on exploratory and developmental applications and requests. Impacts to other resources occur. Common variety minerals are inventoried and made available for commercial sale. Oil and gas leases are issued with minimal stipulations. Low Development Areas are eliminated and leasing is allowed in the proposed wilderness areas.

Visual Quality — Acres in EVC-4 category drastically increase as no consideration is given to visual resources.

WFUD's — While the opportunity of wildlife-related recreation decreases as habitat is impacted, the local community human population increases as a result of industrial activity. Use and management are similar to the Moderate Level prescription.

Soil, Air, and Water — Soil condition is degraded somewhat and runoff increases. Water quality is degraded by sedimentation. Air quality is also degraded during construction and development phases of mineral activity. Air quality is affected, particularly by natural gas flaring at well sites.

Cost Rationale — Timber, range, and recreation costs are the same as the Current Level prescription. Mineral work load costs are associated with the manpower needed to expedite processing of lease application and developmental requests. Administration and compliance is maintained only to protect minimum resource values. Other dollar costs are at the level needed to provide the needed administrative support to provide for the basic inventory and protection of the resource. Wildlife costs are monitoring wildlife habitats and protecting threatened and endangered species.

k. Wildlife Multiple Use Maximum (WLD MU)

1) Purpose — To represent the level of management that emphasizes wildlife outputs,

recognizing that a managed loss of some other resource outputs occurs.

2) Criteria and Assumptions

Timber — Timber management and harvest is designed to help enhance wildlife habitat.

Range — Range emphasizes intensive management systems designed to enhance wildlife habitat. Range improvements are constructed to improve livestock distribution, and to enhance wildlife values but not to increase AUM production. Total forage is allocated as 60% non-consumptive, 30% to livestock, and 10% to wildlife. Livestock grazing is managed to improve the quality of the wildlife habitats while providing adequate forage for livestock. Wildlife habitat needs are incorporated into range analysis, and allotment management plans are designed to reduce conflicts and improve vegetative conditions. Conflicts are generally resolved in favor of wildlife.

Noxious Weeds — Noxious weed treatment continues to contain the spread to current acreage.

Wildlife — Management activities are designed to benefit wildlife and fishery habitats. Plans are developed that identify needs and opportunities for habitat improvement. Conflicts between wildlife and other resources are resolved in favor of wildlife, within legal and/or administrative policy constraints.

Recreation — Recreation management respects special needs of wildlife in key recreation areas, such as woody draws and riparian zones. Because many facilities tend to be in these areas, they are removed or closed if conflicts arise.

Minerals — Oil and gas leases are issued with stipulations to protect other resources. Surface occupancy is prohibited or restricted by season in key wildlife areas.

Visual Quality — The acres in this category decrease since mitigation of visual impacts often benefits wildlife needs. The VQO's are Retention, Partial Retention, and Modification because many visual management needs are consistent with wildlife management needs.

WFUD's — Abundant wildlife habitats and populations encourage wildlife related recreation, and use is high.

Soil, Air, and Water — Good vegetative cover improves infiltration and slows surface runoff. Soil condition improves and less water would be lost to runoff. Water quality improves because less sediment is produced. Air quality is slightly improved.

Cost Rationale — Timber costs are the same as in the Current Level prescription. Coordination with wildlife needs increases the cost of some timber management activities. Range, recreation, cultu-

ral resources, mineral work load, and other dollar costs are the same as in the Current Level prescription. Wildlife costs are associated with the level of management and capital investment needed to enhance habitat and to develop management strategies to utilize other resource activities for the betterment of wildlife values. In addition, the total wildlife budget for capital investment and habitat improvement is increased by 20 percent above current level.

I. Wildlife Maximum — (Wld Max)

1) Purpose — To represent the level of management that maximizes wildlife outputs without regard to other resource outputs, except to meet legal requirements and administrative policies. Other resource activities occur to the extent that they do not adversely impact wildlife habitats or populations.

2) Criteria and Assumptions

Timber — Timber harvests and volumes are scheduled solely to meet wildlife needs. On the Sioux District, stands of ponderosa pine are managed to provide a continuing representation of dog-hair stands for white tailed deer winter range. Aspen stands are treated (cut or burned) to provide new growth. On the Ashland District timber sales are scheduled to meet forage and security requirements of both whitetailed and mule deer. On the Beartooth District timber is harvested from the Plateau and Face areas to provide a diversity of age classes and to reduce the risk of a major fire. Winter ranges are managed to provide an optimal forage cover ratio. Timber stands in the Pryor Mountains are treated to provide a diversity of age classes and to meet summer range requirements of deer and elk.

Range — Livestock grazing is permitted on primary range outside of the riparian/woody draw and breaks ecogroups. Forage allocations to livestock are made on a percentage utilization of key species. Grazing is to cease when this utilization is achieved. The percentage utilization is to be determined based on two criteria: 1) the amount needed to induce plant vigor and 2) the maximum allowable removal without impacting wildlife needs. Systems of management will be designed to meet wildlife needs (i.e. residual nesting cover). All techniques such as site conversions, water developments and salting are permitted so long as wildlife values are enhanced or protected.

Noxious Weeds — Noxious weed treatment continues to contain the spread at current acreages.

Wildlife — Coordination is designed to provide for other uses to the extent that they are compatible with wildlife. Inventories of habitats are made to identify uses and opportunities to improve them for wildlife. Plans are developed to improve habitats and to integrate other uses. Prescribed burn-

ing is used to rejuvenate vigor in shrubs. Timber cuttings are designed to improve forage/cover ratios, access and snag densities. Water developments, including development of ponds for fishing, are made wherever possible. Stream improvement structures are installed to increase fisheries habitats. Vegetative manipulations are made to increase forage for wildlife and cover for prairie grouse. The principal goal is to increase wildlife outputs wherever possible.

Recreation — There is no integration of recreation management. All recreation sites that are key wildlife areas are closed.

Minerals — Minerals development is allowed outside of key areas and to the extent that wildlife values are not impacted. No surface occupancy is allowed in the riparian/woody draw, rimrocks or breaks ecosystems, on slopes over 30%, and in key wildlife areas (winter range, calving and fawning areas, dancing grounds). Timing of drilling is controlled to meet wildlife needs. All road construction is managed to protect wildlife resources. This includes closures and limited season of access. All road layouts are made with rehabilitation and removal criteria as a functional part of planning. All roads not deemed necessary after minerals development are removed. All disturbed areas are to be rehabilitated following development.

Visual Quality — Acres in EVC-4 increase, since activities designed to increase wildlife habitat, such as timber harvest and prescribed burning, do not consider visual values. No VQO's will be established.

WFUD's — Wildlife-related recreation increases under this prescription, since there are abundant acres in prime wildlife and fisheries habitat, as well as abundant populations.

Soil, Air, and Water — Soil and water conditions improve. Runoff volumes and suspended sediments are both reduced. Air quality improves where presently lowered by industrial activities.

Cost Rationale — Timber and range costs are the same as the Current Level prescription. Recreation costs are those associated with current management, including protection of resources, maintaining of selected capital investment, field administration and law enforcement to remove users from key habitat areas, monitoring of effects to wildlife, trail maintenance, signing program, and full and reduced service at facilities. Cultural resources are funded to the level to meet all demands of inventories on projected projects, leases and rights-of-way. Mineral work load costs are associated with the manpower needed to do a quality and timely job of processing leases, project work plans and site location, as well as for proper administration of leases and project compliance. Other dollar costs are at the level needed

to provide the quantity and quality of support to the impacted resources, and to provide for the basic inventory and protection of the resource base of the Forest. Wildlife costs are associated with the level of management and capital investment needed to enhance habitat values. In addition the total wildlife budget for capital investment and habitat improvement is increased by 40 percent above current level.

m. Timber Management — Moderate (Tbr Mod)

1) Purpose — To represent the level of management that emphasizes timber harvest and to protect and maintain the timber resource value as well as other resource values. At this level of management, some outputs may increase over time, but increased outputs is not the management goal.

2) Criteria and Assumptions

Timber — Timber management is designed to harvest timber, but little or no precommercial thinning would be done.

Range — Range management emphasizes intensive livestock grazing systems when economically feasible. Structural range improvements are used to improve livestock distribution. Management systems are implemented to make the best use of transitory range where conflicts do not exist with wildlife values and/or timber values.

Noxious Weeds — Noxious weed treatment continues to contain the spread at current levels.

Wildlife — Wildlife surveys and monitoring are done on a scheduled basis, and management plans for problem habitats are completed by 1990.

Recreation — Recreation facilities are maintained. High-use developed recreation sites will be maintained at full service. Low use sites will be maintained at reduced service levels. Use is on an upward trend, though not particularly emphasized.

Minerals — Oil and gas leases are issued with stipulations that would protect other key resource values. Leasing within the proposed wilderness is not allowed. Mineral activities under the 1872 Mining Law would continue. Existing Low Development Areas are eliminated, and oil and gas exploration and development are allowed.

Visual Quality — Acres accumulate in EVC-4, but to a lesser extent than in some prescriptions because management activities are not numerous. Some EVC 4 would occur associated with minerals development. Visual quality objectives include Partial Retention and Modification.

WFUD's — The management of wildlife-related recreation is moderate. Wildlife and fish habitats and populations are not increasing; so use is not encouraged.

Soil, Air, and Water — Soil and water conditions show no significant change from current conditions. Air quality remains about the same as at present.

Cost Rationale — Timber, range, recreation, mineral work load, wildlife and other costs are the same as the Current Level prescription.

n. Timber Maximum (Tbr Max)

1) Purpose — To represent the level of management that maximizes timber outputs without regard to other resource outputs, except to meet legal requirement and administrative policies.

2) Criteria and Assumptions

Timber — Intensive timber management is practiced on all lands capable, suitable, and available for timber production.

Range — On timber areas, livestock grazing is reduced where loss of timber production may result from grazing. Some seasonal grazing restrictions as well as modifications in allotment management plans may be made to accommodate timber production.

Noxious Weeds — Infestations of noxious weeds are controlled, and current acreages are reduced to eliminate possible competition with timber regeneration.

Wildlife — Coordination with wildlife is not made except to protect threatened and endangered species.

Recreation — Recreation use in timber production areas is restricted to reduce the risk of man-caused fire.

Minerals — Oil and gas development is permitted, but, where possible, facilities are placed on non-commercial forest or on the poorer growing sites.

Visual Quality — There is a dramatic increase in EVC-4 category as there is no consideration for visual resource values.

WFUD's — As wildlife and fish habitat and populations decrease due to no coordination with timber management, the related recreation activities also decrease.

Soil, Air, and Water — Soil and water conditions are lowered on timbered lands and runoff is increased. Air quality is lowered in areas of active logging.

Cost Rationale — Timber costs associated with timber harvest are sale preparation (as it is measured by acres and by thousand cubic feet), site preparation for natural and artificial regeneration, timber stand improvement cost, and other cultural treatment costs such as treating noxious weeds or other plants that compete with regeneration. In addition to these costs, the budget is expanded to cover planning and administration of

pre-commercial thinning and commercial thinning, as well as an increase in administration of final harvests. Range costs are those under current management practices, such as planning inventories, administration, capital investment (Range Betterment and Conservation Practices funds), noxious weed control, and analysis and maintenance of existing improvements. Recreation costs are those associated with current management including protection of resources, maintaining of capital investment, field administration and law enforcement and trail maintenance. Cultural resources are funded to the level to meet all demands of inventories on projected projects, leases and rights-of-way. Mineral work load costs are associated with the manpower needed to do a quality and timely job of processing leases, project work plans and site locations, as well as for proper administration of leases and project compliance. Other dollar costs are at the level needed to provide the quantity and quality of support to the impacted resources and to provide for the basic inventory and protection of the resource base of the Forest. Wildlife costs are to protect threatened and endangered species.

o. Timber Current Management (Tbr Cur)

1) Purpose — To represent the level of management that provides the current level of timber harvest, timber stand improvement, and other cultural treatments needed to protect other resource values.

2) Criteria and Assumptions

Timber — Timber harvest is suitable to supply existing mills with planned increases over the next few years. Some harvest is the result of range and wildlife need.

Range — Livestock use is coordinated with timber management activities to allow use of transitory range by cattle. Cattle use also aids in reducing the accumulation of fine fuels. Some of the additional forage is allocated to wildlife use.

Noxious Weeds — Treatment is continued to contain noxious weeds at current acreages. New infestations are also treated.

Wildlife — Timber harvest is designed to minimize impacts to wildlife and to possibly improve habitat. If harvest would be detrimental to wildlife values the sale will be redesigned or moved.

Recreation — Roaded recreation opportunity improves due to the additional timber access roads. Some areas may be closed to the public during logging operations.

Minerals — Oil and gas production is coordinated; and multi-resource access roads are developed.

Visual Quality — Acres in EVC-4 category fluctuate as harvest cycles are implemented. Visual resource management is integrated into the timber management program.

WFUD's — Interruptions to access to wildlife and fish-related recreation may occur as animals are displaced during harvest and for a period of time afterward.

Soil, Air, and Water — Soil and water conditions are integrated into timber management and some short-term degradation may occur. Air quality remains about the same as present conditions.

Cost Rationale — Timber, range, recreation, mineral work load, wildlife, and other costs are the same as Current Level prescription.

p. Forage — Timber Multiple Use Maximum (FOR-TM MU)

1) Purpose — To represent the level of management that emphasizes timber harvest to enhance the production of livestock forage, recognizing that a managed loss of some resource outputs occurs.

2) Criteria and Assumptions

Timber — Under this prescription, timber harvest is designed to improve forage production for livestock. Thinnings are made at longer than normal spacing to encourage grass production, and to extend the rotation age.

Range — Range management with intensive management systems is emphasized in all areas to utilize transitory range. Some increase in livestock AUM's production occurs. Seasonal adjustments in allotment management plans may be made to accomplish timber objectives.

Noxious Weeds — Noxious weeds are treated to reduce current levels and eliminate new infestations.

Wildlife — Wildlife values are considered to a limited extent, usually only to protect threatened and endangered species.

Recreation — Recreation use is not excluded. Management and use are at a moderate level.

Minerals — Same as Timber Moderate prescription. Facilities are located on the lower production areas where possible.

Visual Quality — Acres in EVC-4 category fluctuate as management acres visually recover from management activities, i.e., new grass and tree growth. Visual quality objectives are Partial Retention and Modification with limited areas of Maximum Modification.

WFUD's — Wildlife-related recreation reflects the decline in wildlife populations. The upward use trend is reduced by this change.

Soil, Air, and Water — Soil and water conditions are temporarily impaired as management activities are implemented. However, as forage conditions improve so do the soil and water conditions. Air quality is not significantly changed.

Cost Rationale — Timber, range, recreation, mineral work load and other dollar costs are the same as Current Level prescription. Wildlife costs are used to monitor wildlife; however, some detrimental impacts are not mitigated. These cost are associated with the level of management and capital investment needed to enhance habitat needed to mitigate some impacts to the wildlife values by other resources.

q. Winter Range — Timber Multiple Use Maximum (WTR-TM MU)

1) Purpose — To represent the level of management that emphasizes timber harvest to enhance wildlife winter range values, recognizing that a managed loss of some resource outputs occurs.

2) Criteria and Assumptions

Timber — Timber management is designed to enhance the quality and quantity of deer and elk habitat, particularly winter range. In some areas this may include clearcutting small areas, planting browse species, burning decadent stands, or other treatments to enhance wildlife values. Timber harvests and volumes are scheduled solely to meet wildlife needs. On the Sioux District, stands of ponderosa pine are managed to provide a continuing representation of dog-hair stands for winter range for whitetailed deer. Aspen stands are treated (cut or burned) to provide new growth. On the Ashland District, timber sales are scheduled to meet forage and security requirements of both whitetailed and mule deer. On the Beartooth District, timber is harvested to provide a diversity of age classes and reduce the risk of a major fire. All winter ranges are managed to provide an optimal forage cover ratio. The timber stands in the Pryor Mountains are treated to provide a diversity of age classes and to meet summer range requirements of deer and elk.

Range — Livestock grazing is minimized and forage allocated to wildlife in timbered ecosystems. Livestock management and grazing is not emphasized in timbered areas.

Noxious Weeds — Noxious weeds are treated to reduce current acreages and eliminate new infestations.

Wildlife — Management activities are designed to enhance wildlife and fishing habitat. Inventories and plans are made to identify needs and opportunities, especially in timber stands.

Recreation — Recreation use that disturbs or disrupts wildlife habitats is discouraged.

Minerals — Oil and gas development are restricted by seasonal restrictions or, if needed, prohibited.

Visual Quality — Visual resource management is integrated in management activities as many visual mitigations also serve wildlife needs. Visual Quality Objectives are Retention, Partial Retention, and Modification.

WFUD's — The wildlife-related recreation use follows the trend indicated by improved wildlife habitat.

Soil, Air, and Water — Soil, air, and water conditions are not significantly changed from the current situation. However, some short-term degradation may occur as management activities are implemented.

Cost Rationale — Timber, range, recreation, mineral work load, wildlife and other dollar costs are the same as Current Level prescription. Timber costs may be higher than Current due to specific treatments identified for wildlife needs.

r. Wilderness Minimum Level (Wilder Min)

1) Purpose — To represent the level of wilderness management that protects the basic resource values of the wilderness. At this level of management, some outputs decrease over time. This prescription applies to the Absaroka-Beartooth Wilderness and to inventoried roadless areas being considered for wilderness classification.

2) Criteria and Assumptions

Timber — No timber harvest occurs in classified wilderness areas.

Range — Range management occurs at minimum level. No grazing is permitted in the A/B Wilderness. Livestock grazing in the inventoried roadless areas is significantly reduced. No new range improvements would be constructed.

Noxious Weeds — Control of noxious weed infestations is minimal.

Wildlife — Wildlife habitat is not manipulated and passes through a succession of ecological changes.

Recreation — Recreation use in wilderness areas continues, although visibility of management is very low. Maintenance is limited. Only the most serious problems are acted upon. Trails and trailheads are open for a shortened season.

Minerals — No leases are issued and no development occurs.

Visual Quality — No acres in the EVC-4 category currently exist in the wilderness and this prescription does not create any. Preservation is the assigned VQO.

WFUD's — Wildlife-related use follows the trends of wildlife habitat which is not emphasized in wilderness by this prescription. The trend, however, is upward, but at a lesser rate than other prescriptions that encourage use.

Soil, Air, and Water — Air quality in the Wilderness is managed to maintain a high level. Soil and water conditions in new wilderness areas are expected to improve as uses are limited or removed.

Cost Rationale — There are no timber costs. Range costs are those associated with continuing established grazing in new wilderness areas. The basic resources are protected while under a season long grazing strategy, and existing capital investments are maintained. Recreation costs are associated with basic resource protection and maintaining capital investments under a shortened season of use. Other dollar costs are for support, protection, and administration of the basic resources. The wildlife program does not have any associated costs.

s. Wilderness Moderate Level (Wilder Mod)

1) Purpose — To represent the level of wilderness management that protects and maintains resource values as defined by law and administrative policy. At this level of management, some outputs may increase over time, but increased outputs is not the management goal.

2) Criteria and Assumptions

Timber — No timber harvest occurs in classified wilderness.

Range — No livestock grazing occurs in the A/B Wilderness. Livestock grazing in the new wildernesses is at or slightly below current levels. Grazing systems are implemented to protect or enhance the wildlife and recreation values, but not to increase livestock production.

Noxious Weeds — Control of noxious weed infestations continues and keeps current acreage under control.

Wildlife — Wildlife management is designed mainly for meeting Forest wildlife targets, particularly in regard to grizzly bear habitat in the Absaroka-Beartooth Wilderness, and other T&E species in new wildernesses.

Recreation — Wilderness use is accommodated, but not encouraged. Visibility of management is moderate. Maintenance is limited to high-use trails and trailheads.

Minerals — No leases are issued and no development occurs.

Visual Quality — The Visual Quality Objective is Preservation.

WFUD's — Hunting, fishing, and nature study occur within the wildernesses at a moderate level.

Soil, Air, and Water — Air quality in the wildernesses is managed to maintain high levels. Soil and water conditions in new wildernesses are expected to improve as uses are limited or removed.

Cost Rationale — There are no timber costs. Range costs are those associated with continuing established grazing in new wildernesses, such as planning inventories, administration, capital investment, noxious weed control, analysis and maintenance of existing improvements. Recrea-

tion costs are those associated with wilderness use including protection of resources, limited capital investment maintenance, limited field administration, law enforcement, trail construction, and the signing program. Other dollar costs are at the level needed to provide the quantity and quality of support for basic inventory and protection of the resource base of the wilderness. Wildlife costs are associated with the level of management and capital investment needed to enhance threatened and endangered habitat values and to mitigate impacts to wildlife values.

t. Wilderness Multiple Use Maximum (Wilder MU)

1) Purpose — To represent the level of wilderness management that emphasizes wilderness outputs, recognizing that a managed loss of some outputs may occur. The assignment of this prescription to new wildernesses may substantially change from current management. Some areas of the Absaroka-Beartooth Wilderness are managed at this intensity at the present time.

2) Criteria and Assumptions

Timber — No timber harvest occurs in classified wilderness.

Range — No livestock grazing occurs in the A/B wilderness. Livestock grazing in the new wilderness areas is held at or slightly below current levels. Grazing systems may be implemented to protect the wildlife values or to enhance wilderness values, but not to increase livestock production.

Noxious Weeds — Control of noxious weed infestations continues and keeps current acreage under control.

Wildlife — Wildlife management is designed mainly for protecting threatened and endangered species in the wilderness area, while maintaining wilderness values.

Recreation — There is high wilderness ranger visibility in all wildernesses and high level of maintenance, public contact, and information. The use trend is upward at an accelerated rate.

Minerals — No leases are issued and no development occurs.

Visual quality — The VQO objective is Preservation. There are no acres of EVC-4 category.

WFUD's — Wildlife and fish related activities are encouraged within the existing and newly classified wilderness, although hunting opportunity may be limited in some areas, since habitats are not being managed.

Soil, Air, and Water — Air quality in the Wildernesses is maintained at current high levels. Soil and water conditions improve on new wildernesses as some uses are reduced or eliminated.

Cost Rationale — There are no timber costs. Range costs are those under current management practices such as planning inventories, administration, capital investment (Range Betterment and Conservation Practice funds), noxious weed control, and analysis and maintenance of existing improvements. Recreation costs are those associated with current management, somewhat escalated to represent the increased intensity of wilderness management. Activities include protection of resources, maintaining of capital investments, field administration, law enforcement, trail construction, and the signing program. Other dollar costs are for the support, protection and administration of basic resources. Wildlife costs are associated with the level of management and capital investment needed to protect threatened and endangered species in wilderness areas.

u. Wilderness Current Management (Wilder Cur)

1) Purpose — To represent the level of wilderness management that maintains the present emphasis and intensity on resource outputs in the Absaroka-Beartooth Wilderness.

2) Criteria and Assumptions

Timber — No timber activity occurs.

Range — No livestock grazing occurs in the A/B Wilderness. Livestock grazing in the wilderness areas is held at or slightly below current levels. Grazing systems may be implemented to protect the wildlife value and enhance wilderness values, but not to increase livestock production.

Noxious Weeds — Control of noxious weed infestations continues and keeps current acreages under control.

Wildlife — Wildlife management is designed mainly for meeting Forest wildlife goal and objectives and for mitigating the effects of other resource programs on wildlife.

Recreation — Current wilderness use is moderately high. There is adequate field administration and public contact in high-use areas of the existing wilderness to assure resource protection.

Minerals — No leases are issued and no development occurs.

Visual Quality — The visual quality objective is Preservation. There are no acres in this category.

WFUD's — Wildlife and fish related recreation occurs within the wilderness, and resource impacts are rehabilitated as they occur. Use is not particularly encouraged, although the use trend is upward.

Soil, Air, and Water — Air quality in the wildernesses is maintained at current high levels. Soil and water conditions in high traffic areas are impacted, but general conditions are undisturbed.

Cost Rationale — There are no timber costs. Range costs are for practices such as planning inventories, administration, capital investment (Range Betterment and Conservation Practice funds), noxious weed control, and analysis and maintenance of existing improvements. Recreation costs are those associated with current management, including protection of resources, maintaining of capital investment, field administration, law enforcement, trail construction, and signing program. Other dollar costs are for the support, protection, and administration of basic resources. Wildlife costs are associated with the level of management and capital investment needed to protect habitat values in the wilderness areas.

v. Wilderness Unit Plan (Wilder Unpl)

1) Purpose — To represent the level of wilderness management that is outlined by unit plans and by the Interim Absaroka-Beartooth Management Plan. This level meets legal, legislative, and administrative commitments, as well as increases management intensity to encourage and perpetuate wilderness use, considering other resource values.

2) Criteria and Assumptions

Timber — No timber activity occurs.

Range — No livestock grazing occurs in the A/B Wilderness. Livestock grazing in the new wilderness areas is held at or slightly below current levels. Grazing systems may be implemented to protect or enhance the wildlife and wilderness values, but not to increase livestock production.

Noxious Weeds — Control of noxious weed infestations continues and keeps current acreage under control.

Wildlife — Wildlife management is designed mainly for meeting Forest wildlife targets, for mitigating the effects of other resource programs on wildlife, and for integrating habitat needs into wilderness management to the extent possible.

Recreation — Wilderness use increases in response to intensive management. Administration and maintenance mitigate the effects of the increased use to maintain a high level of resource protection.

Minerals — No leases are issued and no development occurs.

Visual Quality — VQO is Preservation and no acres accumulate in EVC-4.

WFUD's — Wildlife and fishing related recreation increases along with other recreation use, particularly as habitats are managed.

Soil, Air, and Water — Air quality in the Wildernesses is maintained at current high levels. Soil and water conditions are impacted in high traffic areas.

Cost Rationale — There are no timber costs. Range, recreation, and other dollar costs are the same as the Current Level prescription. Wildlife costs are associated with the level of management and capital investment needed to enhance and integrate habitat management into wilderness management to the extent possible.

w. Wilderness Unconstrained Minimum (Wilder Unc)

1) Purpose — To represent the level of wilderness management that does not necessarily meet legal, legislative, or administrative commitments other than to restrict uses not allowed in classified wildernesses. Some outputs are produced without administration (i.e., wildlife, water).

2) Criteria and Assumptions

Timber — No timber activity occurs.

Range — No livestock activity occurs in new wilderness areas.

Noxious Weeds — Control of noxious weed infestations continues in a limited manner, and current acreages are kept under control.

Wildlife — Wildlife management is designed at mitigating the effects of wilderness on threatened and endangered species.

Recreation — Maintenance and field administration is limited; use is not encouraged. Trails and trailheads are not kept open for a full season.

Minerals — No mineral activity occurs.

Visual Quality — The VQO objective is Preservation. With unmanaged use, some resource disturbances may occur that qualify as a "disturbed" condition classification (EVC-4).

WFUD's — Wildlife and fish related recreation is not encouraged, although allowed.

Soil, Air, and Water — Air quality in the Wildernesses may not remain at current high levels. Soil and water conditions are likely to decline, since traffic and use near riparian areas are not managed.

Cost Rationale — There are no costs for timber, range or mineral activities. Recreation costs are associated with a small degree of planning and inventory to protect resources. Other dollar costs are support, protection and administration to a level needed to protect the basic resources of the National Forest lands. The wildlife program at this level does not have any associated costs.

x. Recreation Multiple Use Maximum (Rec Mumax)

1) Purpose — To represent the level of management that emphasizes recreation outputs, recognizing that a managed loss of some outputs may occur. Conflicts between recreation use and other resources are resolved in favor of recreation.

tion, within legal and/or administrative policy constraints.

2) Criteria and Assumptions

Timber — Timber harvest is designed and managed to enhance recreation opportunities.

Range — Range management with intensive management systems is implemented to minimize grazing-recreation conflicts. Range improvements are located away from key recreation areas, and are located to minimize impacts on the visual quality of the area.

Noxious Weeds — Control of noxious weed infestations continues and current acreages are kept under control.

Wildlife — Wildlife management is designed to promote wildlife and fish related recreation activities such as hunting, fishing, and nature study.

Recreation — Recreation use increases, and use is encouraged through high public contact and field administration. Maintenance and service levels are high and complete.

Minerals — Minerals development is allowed outside of key recreation areas, to the extent that recreation values are not substantially impacted. No surface occupancy is allowed in the riparian/woody draw, rimrocks or breaks ecosystems, on slopes over 30%, or in key recreational areas. All roads built will be managed to protect and create recreation opportunities. All disturbed areas are to be rehabilitated to meet visual quality objectives.

Visual Quality — Very few acres enter and remain in EVC-4 category. Emphasis is on maintaining high visual quality and thorough rehabilitation. The VQO's are Retention, Partial Retention, and limited Modification.

WFUD's — Wildlife and fish related activities are encouraged, and wildlife habitats are improved and protected.

Soil, Air, and Water — Soil disturbances are likely to occur where recreation use is especially high, although maintenance and administration is aimed at rehabilitation. Air quality is maintained at current high levels.

Cost Rationale — Timber, range, mineral work load, wildlife and other dollar costs are the same as the Current Level prescription. Recreation costs are those associated with current management, including protection of resources, maintaining of capital investment, field administration, law enforcement, trail construction, signing program, and full service levels. Cultural resources costs are at the level necessary to meet all demands of inventories on projected projects, leases and rights-of-way.

y. Recreation Maximum (Rec Max)

1) Purpose — To represent the level of

management that maximizes recreation outputs without regard to other resource outputs, except to meet legal requirements and administrative policies.

2) Criteria and Assumptions

Timber — Timber harvest is designed and managed to enhance recreation opportunities.

Range — Where economically feasible, intensive grazing systems are emphasized to reduce conflict with recreation. Range improvements are designed and located to avoid conflicts with recreationists. Conflicts between range and recreation are resolved in favor of recreation.

Noxious Weeds — Control of noxious weed infestations are continued and current acreages are kept under control.

Wildlife — Wildlife management is designed to protect wildlife habitat, as long as recreation opportunities are enhanced.

Recreation — Use is emphasized and encouraged. There is exceptionally high maintenance, field administration, and public contact.

Minerals — Oil and gas leases are issued with stipulations to protect recreational resources. Surface occupancy is prohibited or restricted in key recreation areas.

Visual Quality — There are few acres in the EVC-4 category, and they are rehabilitated quickly to meet the VQO's, which are Retention and Partial Retention.

WFUD's — These activities occur in conjunction with recreation use.

Soil, Air, and Water — Soil disturbances are likely to occur where high recreation use occurs. Air quality is maintained at current high levels.

Cost Rationale — Timber, range, and mineral work load costs are the same as the Current Level prescription. Recreation costs are those associated with current management, including protection of resources, maintaining of capital investment, field administration, law enforcement, trail construction and maintenance, the signing program, and full service campgrounds. Under this emphasis, the budget for these activities is increased by 40 percent. Other dollar costs are at the level needed to provide the quantity and quality of needed support to the impacted resources, and to provide for the basic inventory and protection of the resource base of the Forest. Wildlife costs are associated with the level of management and capital investment needed to enhance habitat to create recreation opportunities.

4. Use of Cost Efficiency in Developing Prescriptions

Two basic assumptions are used in developing prescription costs: 1) costs experienced in implementing past practices are a reasonable

basis from which to predict future costs; and 2) the funding for production of outputs includes only the necessary funding needed to do a quality management job. Quality management means to meet the minimum management requirements of all resources involved through better management of a given resource. Therefore, the minimum management requirements are considered in balancing the resource outputs, and this is reflected in the cost development phase. Costs are based on the total resource programs (decision variables).

Cost efficiency is considered in developing prescriptions in the following manner. Objectives, standards, and guidelines are established for each prescription. Given the objective of the prescription, costs are estimated for total resource programs (decision variables) to meet the standards or guidelines of the prescription, and are compared to the values (benefits) produced. Outputs by decision variable are divided into the total cost of each decision variable to establish a per unit output cost. In most cases comparisons of the unit costs and unit values (benefits) yield a positive net value. In the case of timber, however, unit costs often exceed unit values, even though the outputs are produced in the most cost efficient manner known. In most prescriptions, the priced net value contributions of other resources more than made up for any negative timber values. Prescriptions are carried forward if they are cost efficient in achieving prescription goals.

E. Development of Timber Harvest Intensities

Timber management regimes were developed by considering the types of silvicultural practices that are feasible and sound for the stands on the Forest. Yield information was used that was developed by the Regional Office Timber Management section and Forest timber information. Costs and benefits were developed for practices and outputs associated with each regime that follows:

Overstory/Understory (OS/US) stands require prescriptions that remove the overstory and manage the remaining understory. These stands are available for timber harvest the first period through the fifth. Over time the overstory volume is reduced and the understory volume increases as young trees mature. The understory became accessible to harvest in the tenth period.

Mature Saw (MSAW) stands are the current old growth on the Forest, and those stands not harvested in the next 50 years will continue to lose volume. Mature saw ponderosa pine and Douglas-fir can be stored on the stump for a long time. The mature lodgepole pine is not long lived, and mortality is already heavy in these stands. These stands are available for harvest in the first period and remained available through the fifth period.

Immature Saw (ISAW) stands are timber stands nearing maturity, and these stands currently contain merchantable timber. They are available for commercial thinning. Timber harvest could commence in the fifth period and continue through out the planning horizon.

Stagnated (STAG) stands in lodgepole pine and ponderosa pine are common. These stands usually contain some merchantable timber and can be converted to productive stands through commercial operations. These stands are available for harvest the first period and remained accessible through the fifth period.

Pole (POLE) sized stands are generally not operable for sawlog operations, but commercial thinning can take place. Entry into these types of stands is delayed until the fifth period and the stands remain available through the seventh period.

Seedling/Sapling (S/S) stands are available for commercial thinning, but are not considered for thinning or harvest until the 14th period and remained accessible through the 18th period.

Non-Stocked (NST) stands are not scheduled for planting or any other management for several decades.

Timber harvest, to benefit other resources such as range and big game winter range, is an important consideration in most timber management prescriptions.

F. Development of Yield Tables and Coefficients

1. Overview

This section describes how the yields for each resource are developed. Some yields were developed for analysis in FORPLAN and some were analyzed in other ways.

2. Timber

Yield tables for timber production were developed by combining Regional and Forest information. This produced mixed conifer yield tables, developed by the Gallatin National Forest, which were applicable to the Custer National Forest.

These tables were used with some revision to reflect the difference in species mixture. An appropriate timber prognosis model for the ponderosa pine of eastern Montana and northwestern South Dakota does not exist so ponderosa pine yield tables were developed from earlier work done during the development of the Ten Year Timber Management Plan.

3. Recreation

Recreation use as reported in Recreation Information Management System (RIM) for 1980 served as the base data. The scheduled output for FORPLAN represented all recreation visitor days (RVD's). The economic analysis for wildlife

values was made through examining the wildlife and fishing user days (WFUD's). The WFUD's represented the portion of the RVD's that were wildlife and fish related.

The Forest recreation data base was divided first into Ranger Districts and then into Physiographic Areas (PA), as the first breakdown of recreation use.

In areas where the reported dispersed use is not easily assigned to PA's, by either State, County or RIM compartments, an acre designation was made, then verified through the Ranger District. In some cases, a combination of methods was used to designate the use.

This use was then broken down by dispersed activity, using the Districts' overall percentage of each activity. For example, the RIM report showed 18 activities occurring on units of the Ashland Range District. The percentage of each activity is given in RIM, such as automobile use (10.3 percent), motorcycle (4.7 percent), snow machine (2.8 percent) and so on, covering all 18 activities, totaling 100 percent.

These percentages were used to distribute the RVD outputs over the PA so that ecogroup assignments could be made. An Interdisciplinary Team consensus was reached regarding the assumed activity occurrence by ecogroup. For example, because most roads follow draws, almost all automobile travel and associated activities were assumed to take place in the draws or bottoms ecogroup. Snow machine and motorcycle use, however, was assumed to occur fairly equally across all ecogroups, except for the outcrop ecogroup which defies human occupation other than for rappelling or mountain climbing. These assumptions were tailored for each Ranger District in order to respond to a number of peculiarities, such as the high degree of ORV use at Hankinson Hills on the Shyenene Ranger District that has its own set of unique ecosystems.

Once the ecogroup (Analysis Area) assignment was completed, the use was divided by the number of acres in the ecogroup. This is the required unit for the FORPLAN yield table: output/acre. This value represents the amount of dispersed use reported for 1980 on each acre across the Forest. It is important to remember that these figures did not include the wildlife-related use, as previously defined above.

The developed site uses were then assigned to the ecogroup in which they fell. Many ecogroups did not have developed RVD's assigned to them. This assignment was also divided by the acres in the ecogroup, creating a coefficient representing the developed RVD/acre. The wilderness RVD's were simply assigned to Absaroka-Beartooth Wilderness analysis area.

Keeping these three values separate (dispersed, developed and wilderness) facilitated the projection of growth in each type of use. The Regional Office provided trends for these types of use which were used to individually project growth through time. (Reference Regional Office letter dated 10/20/80 received 12/5/80.) The projections of dispersed, developed and wilderness recreation use were made in a separate analysis. These results were used for developing FORPLAN yield tables and reflected the individual activities.

The projections for the Custer NF were analyzed and trends calculated as shown below:

**PERCENT INCREASE IN RVD'S PER
INCREMENT OF YEARS**

Year	Developed	Dispersed	Wilderness
1980 — 1985	2.80%	4.07%	1.8%
1986 — 1995	1.79%	2.06%	1.4%
1996 — 2005	1.65%	1.89%	1.3%
2006 — 2015	1.54%	1.71%	1.3%
2016 — 2025	1.44%	1.59%	1.3%

These annual trends were modified to reflect differing management prescriptions, where use is expected to increase faster or slower, stay the same, or even perhaps decrease.

Each type of RVD was individually projected at the specified trend for each 5-year period. The 5th year's totals were added together and divided by the analysis area's acreage. This process allowed for individual projections as well as for a responsive combining of all three types of uses into one coefficient for FORPLAN purposes.

Due to limitations of the FORPLAN model and the uniqueness and specificity of ecosystems, activity designation and management prescriptions not all trends and relationships coefficients for recreation could be displayed in yield tables. Therefore, ten to fifteen unique yield tables were developed to be responsive to a selected group of special analysis areas that have important recreation contributions.

Analysis of the wildlife related recreation use (WFUD's) activities followed the same procedure as described above. The different activities were assigned to the ecogroup in which they had the highest probability of occurring. They were then reduced to a yield per acre based on the 1980 RIM reports. From this point, trends were applied and activities are consolidated to produce a projected yield for the ecogroup on a per acre bases. Yields were then adjusted to reflect the type of management emphasis indicated by the management prescription for that ecogroup.

4. Wildlife Coefficients

Forest planning regulations require wildlife outputs to be presented as animal numbers. A

method was developed for the Forest to express the value of the wildlife habitats in terms of animal numbers. This process was based upon the concept that the forest is currently providing a certain capacity for wildlife species, and that any change to the vegetative structure, either natural or man-made, will change that capacity. Wildlife habitat use is the basis for establishing the values of the habitats. All resource activities were evaluated for their effect on vegetative structure and species composition, as well as for changes that were expected to occur resulting from disturbance associated with the activities.

The wildlife analysis involved four major steps: (1) Selecting wildlife species to track through the modeling process, (2) estimating the value of the habitats to wildlife (effective acres), (3) interpreting the value of the effective acres in terms of population numbers (Provided Capacity (PC)), and (4) evaluating vegetative changes and disturbance factors and relating them as changes to the value of the habitat.

a. Species Selection

Species were selected based upon a variety of criteria including (1) availability of information on the species and how its habitat is used and how it reacts to changes within its habitat, (2) the amount of interest in the species, and (3) how representative the species is of an ecosystem. The three species selected are elk, deer and sharptail grouse. These species were not to be considered as absolute indicators of habitat, but they meet the above criteria. Other species were selected as true habitat indicators for monitoring that were not considered in the FORPLAN model (DEIS Chapter III p. 30, 31).

b. Habitat Evaluation

For each species selected a Habitat Suitability Index (HSI) was established. The base units used were the ecosystems on the Forest. Descriptions were written for evaluation of the habitat for the species, based upon information available from on-the-ground studies and published literature. In all cases, an attempt was made to use data derived from studies on the Forest or on nearby similar ecosystems. Information for ratings was derived from district management plans, allotment management plans, biological studies and professional judgment.

c. Population Evaluation

The wildlife populations for the areas were derived from the respective State Fish and Game Departments. Insufficient data was available concerning populations of sharptail grouse, and only effective acres were used to evaluate impacts to that species. Care was taken to obtain the most representative figures, and only long term averages were used. The figures were adjusted according to observability rates and to estimates

of population versus carrying capacity. The populations were then split out by ecosystems according to use patterns.

d. Yield Table Development

A valuation (coefficient) was assigned to each ecosystem based upon the HSI. The ecosystem acres were then multiplied by this coefficient to derive the "effective acres" for the ecosystem.

The effective acres for each ecogroup were divided into the capacity figures to develop the provided capacity (PC) coefficient. The PC represented a long-term average for the current vegetation and disturbance situation of the Forest. The actual population may be higher or lower at any moment. Consecutive mild winters would cause populations to rise substantially above the PC, and a severe winter could push populations far below it. The PC is most accurately used as an indication of trends.

Prescriptions were evaluated for their effects on the habitats for the selected wildlife species. The coefficient was changed to reflect expected changes in the environment expected to occur under each prescription. A change in the coefficient resulted in changes in the amount of effective acres and in the PC.

5. Range

The basis for developing the range forage coefficients and hence yield tables was the Range Allotment Management Information System (RAMIS). The RAMIS data base is a comprehensive system for collecting, editing, updating and retrieving range allotment and related data (FSH 2209.12).

The RAMIS data base for the Custer National Forest was completed in 1981, for each allotment on the Forest. Subsequent corrections and refinements were made to reflect updated range analyses and allotment management plan (AMP) information. The following methodology was used to formulate the range coefficients from which yield tables were ultimately developed.

a. *Step 1:* RAMIS data were completed on every allotment, stock driveway, special use pasture, etc. Part of this data-gathering involved making projections of AUM capacity of each allotment under varying management strategies. These projections were made after reviewing AMPs, range analyses, and comparing similar allotments. Where range analyses or AMPs were not available, projections of estimated capacity were made based on District knowledge of the allotment(s).

b. *Step 2:* Allotments were then segregated by: (a) range District and (b) physiographic area, to correspond to the level 1 and level 2 identifiers in the FORPLAN model.

c. *Step 3:* After the allotments were grouped by physiographic area, suitable/unsuitable acres by ecosystem were determined and calculated utilizing allotment analyses, unit plan maps, and production/utilization studies. To this point, allotments were broken into suitable/unsuitable range by ecogroup which represented analysis areas in FORPLAN.

d. *Step 4:* After Step 3 was completed, forage production were determined for each ecogroup or analysis area, again utilizing range data or personnel knowledge available.

e. *Step 5:* The following calculations were made utilizing the data mentioned above of: (a) projected AUM's furnished through RAMIS, (b) suitable acres by ecogroup and (c) projected average forage production by ecogroup.

1) Total forage production on suitable range by ecogroup was determined. All ecogroups were then totalled to give total allotment productions on all suitable acres.

2) The total forage produced on all suitable range in an allotment was divided by the AUMs projected through RAMIS for a given management strategy or prescription. This gave the total forage required per AUM for an allotment.

3) AUMs by analysis area were then calculated by dividing the forage productions in each ecogroup or analysis area by the forage requirement per AUM. This calculation resulted in AUM production by ecogroup.

4) Suitable acres per AUM were then determined by dividing AUMs for each ecogroup by the number of suitable acres in that ecogroup.

5) AUMs per acre by ecogroup or analysis area were determined by taking the reciprocal of suitable acres per AUM.

f. *Step 6:* Coefficients were similarly computed for each FRES (ForestRange Environmental Study) management strategy or prescription. The individual coefficients were averaged for each analysis area by physiographic area by management prescription.

A complete discussion of the coefficient development process and an example can be found in the planning record ((42) 1922.24b) for the Custer National Forest.

A second methodology described in Production Coefficients and Economic Guidelines for Big Game and Livestock, July 1, 1981, was used to test livestock coefficients developed through the Forest methodology. An example and comparison of these methods are contained in the planning record for the Custer National Forest.

6. Minerals

The minerals yield analyzed in FORPLAN was expressed in barrels of oil. The following procedure was used to calculate the oil reserves for the various analysis areas. These reserves were then used as the basis for the development of the coefficients for barrels of oil by alternative.

a. Oil Reserves

1) Determine which geologic formations are potentially productive within each physiographic area

2) For each formation (item 1) determine the following reservoir characteristics:

- a) Average pay thickness
- b) Average reservoir porosity
- c) Oil saturation (1-water saturation)
- d) Recovery factor
- e) Formation volume factor

3) Using the above characteristics, calculate the recoverable barrels per acre for each formation.

4) The recoverable barrels/acre were then multiplied by the percent of the area expected to be productive. This percentage was based on average reservoir densities, productive trends, and data provided by industry. The resulting figure was then multiplied by the acres in the analysis area to determine the total recoverable barrels per analysis area.

5) In areas with existing production, the number of barrels already produced was subtracted from the value derived in item 4.

b. Yield Table Coefficients

The yield table coefficients were derived by decreasing the recoverable barrels/acre by a percentage if the prescription had significant constraints on oil and gas activities. The remaining recoverable barrels/acre were designated by time period to reflect the expected rate of production based on the alternative.

c. Minerals Workload Coefficients

The minerals workload coefficients were developed by estimating the number of various permits that would need to be issued in association with the level of production expected for a given prescription. Then the total costs of permit issuance and administration was divided by the acres in the analysis area to give a dollar per acre coefficient. The costs considered were those at the District level and included only direct project costs.

7. Visual Condition

a. Existing Visual Condition System (reference to R-5 FSM 2383.4, Supplement 113, May 1983, Measure of Accomplishment)

The Existing Visual Condition system classifies the present state of visual alternation of an area measured in degrees of deviation from the natural-appearing landscape. In order to estimate environmental effects of implementation of alternatives, it was necessary to compare the predicted future visual condition of the landscape of each alternative against the existing visual situation. The existing visual condition inventory served as a baseline for such comparisons. It also served as an historic record of the degree and amount of physical alteration of the landscape and may be used as part of the Recreation Opportunity inventory to delineate the "Evidence of Man." The inventory will also serve as a rough guide in identifying areas where visual resource improvement activities may be desirable.

The following are the premises upon which the inventory was made:

1) Each area will be judged as to the degree of alteration from a desired visual goal of "natural appearing" landscape, since research indicates that this is the public's expected image of the National Forest lands.

2) Measurements must be capable of direct comparison with the predicted future visual condition that would result from implementation of alternatives.

3) The inventory is a three dimensional physical inventory, primarily developed from aerial photographs. It will measure the physical size and location of the alteration by degrees or amounts of change.

4) The existing visual condition will not establish priorities for rehabilitation. It only indicates what alterations are present.

5) Existing visual condition has no relationship to numbers of viewers nor to their degree of sensitivity to visual alterations.

6) Existing visual condition is independent of variety classes and sensitivity levels or specific observer positions.

7) The inventory should be updated whenever the Forest land management plan is updated.

b. Existing Visual Condition Classes

Existing visual condition classes are described in terms similar to those used to describe Visual Quality Objectives, but cannot be directly compared since they are evaluated from a physical, aerial viewpoint rather than from the ground. The definitions of the classes follow:

EVC 1-Untouched — Areas of 5000 acres in which only ecological changes have taken place, except for low impact rails and fences.

EVC 2-Unnoticed — Changes in the landscape are not visually evident to the average person unless

pointed out. This also includes low visual impact 2-track trails and roads that may or may not be visible on most aerial photo's.

EVC 3-Minor Disturbance — Changes in the landscape are noticed by the average person, but they do not attract attention. The natural appearance of the landscape still remains dominant. This includes developed pastures and roads and fields not associated with farmsteads.

EVC 4-Disturbed — Changes in the landscape are easily noticed by the average person and may attract attention. This includes cropland or highly developed hayfields (structural irrigation and canals). Well-designed oilfields are most always included, since their size and influence over the landscape is not entirely mitigatable. The natural appearance of the landscape is definitely impacted in fields with well spacing at 160 acres or less.

EVC 5-Major Disturbance — Changes in the landscape are major and would be obvious to anyone. These changes stand out as a dominating impression of the landscape. Included are oil fields that are not designed or have no mitigating measures, as well as other activities that have major landscape impacts.

EVC 6-Drastic Disturbance — Changes in the landscape are in glaring contrast to the natural appearance. Almost anyone would be displeased with the effect, and would agree that rehabilitation is required.

c. Yield Table Development

The EVC classes of the Custer NF were mapped, usually on aerial photos. Some areas of the forest were not covered, and planimetric maps and judgement were used. This inventory served as the base data from which the EVC yield tables were developed.

The purpose of the yield tables was to predict the increase or decrease in acres in the EVC Class 4. EVC 4 was selected after reviewing all of the mapping. The management team decided that the areas currently in EVC 4 were representative of the upper limit of acceptable visual alterations. These areas were usually the highly developed oil fields or old mining areas. While the impacts are objectionable to a high degree, any further disturbance will result in significant decrease, in visual quality. In 1980, the acres in EVC class 4 totaled 122,189, or roughly 5 percent of the net land base. There were some areas of the Forest that were in the EVC 5 and 6, but these areas are either in early oil development or identified for rehabilitation.

The yield tables were structured to be cumulative. This means that where acres become impacted, their acreages accumulated through time, until such time that nature or manmade rehabilitation takes place. The actual yield table represents the

percentage of each analysis area predicted to be entered into the EVC class 4 as a result of the implementation of the prescriptions. The addition or subtraction of acres in the EVC 4 category depended upon the implications of the given prescription. Also taken into account was the assigned Visual Absorption Capability of the analysis areas. This influenced the percentage of the total acreage entering the EVC class 4.

8. Roads

Only local roads built within timber sales were considered in the FORPLAN model since most roads needed for timber management in the future are expected to be constructed by the oil and gas industry. One of the assumptions made early in the planning process dealt with how and where oil and gas development would occur. Based on the best information available from industry at that time it is expected that most of the Forest would be roaded by the oil and gas industry within the next twenty years. This will provide needed roads for timber management through this planning period, and road needs will be re-evaluated periodically.

9. Fisheries

The fisheries resource was evaluated by (1) effects on downstream fisheries, and (2) effects on the riparian zone from (a) grazing, (b) timber harvests (c) and oil and gas development.

Streams management within the Forest boundary can influence the conditions of the larger fisheries downstream by affecting: (1) the quality of water, (2) the rate at which the water is discharged from the upper tributaries, (3) water temperature, (4) water chemistries, (5) nutritional flow (organic energy), (6) sediment discharge, (7) fish recruitment, and (8) stability of flow.

With few exceptions, the larger rivers (including those of the "Blue Ribbon" quality) that flow through southeastern Montana originate within the national forest boundaries. Except where checkerboard ownership exists, the condition of the water that enters the downstream river is almost entirely influenced by the land management practices occurring within the Forest.

Downstream Recruitment Model

The model is intended to be used as a general average for the forest because each drainage system will vary. The Forest has approximately 15 percent pools. This results in considerable competition for local territory among adults, which would encourage large numbers of fish to move downstream. The downstream demand for recruitment will vary from stream to stream as well. The downstream demands may vary from year to year, and following a year with high adult mortalities, the need for the fry that would be available for replacing these losses would be higher than in other years. The majority of the

emigrants are fry. A study on the Yellowstone River indicated that 39 percent of the adult brown and rainbow trout exhibited movement of a mile or more, and 65 percent of these migrated downstream as far as 21.6 miles (Montana Dep. of Fish, Wildlife and Parks 1975).

Resident trout (salmonoids) require streambed territories per fish that vary in area approximately in direct proportion to the weight of the fish. The optimum density of fish per area of stream will vary depending upon stream habitat conditions and fish species, but once selected this territorial tendency would encourage fish movement, with the majority of fish moving downstream. Therefore, because of the territorial behavior characteristic of salmonids, each stream can accommodate a limited number of fish, and the vast majority of the displaced fish move downstream and the emigrants are generally the smallest fish in the population. Workman (pers. com.) estimated from his work that as much as 75 percent of the fry/fingerling population will drift downstream during the first year.

To help estimate the recruitment production in the tributaries that would enter the downstream fishery, the model used the following assumptions:

a. Suitable spawning streams within the forest would be those streams with a suitable gradient of 5 percent or less. (This is based upon personal observation.)

b. Five percent of the surface area of the stream would be riffle area suitable for redd development. (This is based upon personal observation, existing surveys, and Hickman and Raleigh 1982.)

c. Approximately 30 percent of the suitable spawning areas within the streams are used by adult spawners (Pat Graham, pers. com.). This is an overall average based upon resident fish use. Certain streams, particularly those associated with migratory runs, could be considerably higher.

d. Each spawning pair requires approximately 2.0 square meters of spawning habitat (extrapolated from Reiser and Bjornn 1979). For the average stream condition, there should therefore be approximately 30 spawning pairs per acre of stream habitat.

e. Each spawning female is capable of producing 1,000 eggs annually (Brown 1971).

f. Egg survival to hatching under optimal natural conditions is 70-80 percent (McFadden & Cooper, 1964 adjusted to observed local conditions).

g. Survival from fry to fingerling is 2-10 percent (McFadden and Cooper, 1964). Based upon personal observations, the 2 percent figure appears more realistic for local conditions.

h. Survival from fingerling to catchable size is 30-40 percent (White, R., pers. com.).

i. Seventy-five percent of the fry/fingerling drift downstream by the end of their first year (Workman, pers. comm.).

Based upon these assumptions, each acre of stream with a stream gradient of 5 percent or less would be capable of producing 320 fingerlings or 100 catchables that would be available to the downstream fishery each year. This would be in addition to supporting the recruitment to any local resident fishery. These figures are based upon average habitat capabilities and could vary significantly from stream to stream depending upon fish species, food abundance, climatic variations and general aquatic habitat conditions (with emphasis on gradient and rates of sedimentation).

Up to this point, river dependency on upstream fisheries has been discussed. However, many of the streams within the Forest are major tributaries to large reservoirs and lake fisheries. These impoundments generally support adfluvial fisheries (fish that migrate up into the streams from the lakes to spawn, with both the adults and fry returning back to the lake environment) and are dependent upon their tributaries for sufficient flows of high quality water and suitable spawning habitat. The populations of these lakes are maintained (or supplemented, depending upon the size of the recruitment pool) by the continuing downstream movement of small fish. This source of recruitment can come either from the resident stream populations and/or from the annual spawning migration of the lake-dwelling fish.

It should be noted that even if a particular river did not rely heavily on the upstream recruitment for maintaining a stable population size, the downstream movement of fry would still contribute to the biomass of the downstream fish population by being available as an important food source. As much as 86 percent of the fry population in a fishery has been used as a food source by larger fish, depending upon predation density (Allen, 1969).

The above assumptions were used in the model to develop fish populations by alternative. Populations varied depending on the type of management designation imposed on the drainage in which the fishery habitat exists. This output was determined outside the FORPLAN model.

IV. Cost-Efficiency and Net Public Benefit

This section describes cost-efficiency criteria and explains how net public benefits is derived. This analysis is required by National Forest Management Act regulations (36 CFR 219) and plays an important part in the development, compari-

son, and selection of Forest planning alternatives. Figure B-1 displays the factors included in net public benefit.

A. Net Public Benefit

Maximization of net public benefit is a goal of the Forest planning process. Net Public Benefit is the overall value to the Nation of all outputs and positive effects (benefits) less all the associated Forest inputs and negative effects (costs) of producing priced and nonpriced outputs from National Forest lands. Thus, net public benefit represents the sum of priced outputs (PNV) plus the net value of nonpriced outputs. Net public benefit cannot be expressed as a numeric quantity because PNV cannot be added to qualitatively valued nonpriced outputs. In addition, not all resource outputs have been assigned monetary values and costs.

B. Present Net Value (PNV)

PNV represents the dollar difference between the discounted value of all priced outputs and all Forest costs over the 75-year planning period. Two discount rates, 4 percent and 7½ percent were used to represent the real monetary costs over time. Priced outputs include those outputs with market values (timber, range and oil) and those outputs with assigned nonmarket prices (recreation and wildlife and fish user days).

Each alternative and benchmark, except benchmarks where resources were maximized, was designed to achieve its goals and objectives in a manner that produces the greatest PNV. This was accomplished by solving FORPLAN with the objective function of maximizing PNV while meeting the specified constraint of the benchmark or alternative. Benefits excluded from the analysis were coal, special uses, actual receipts for developed recreation, firewood permits, natural gas production and other existing or known mineral deposits. The following section describes how the prices and costs were calculated.

1. Priced Output Parameters Used in PNV

a. Discounting

Two discount rates were used to solve FORPLAN and to calculate the economic consequences of the benchmarks and alternatives. The 4 percent rate approximates the real return on corporate long-range investments above the rate of inflation. (Row, Kaiser, Sessions, 1981). Inflation is not included in the discount rates, benefits, and costs due to the difficulty of estimating future inflation rates and because inflation is assumed to equally affect both costs and prices. This rate was used to solve FORPLAN in all cases except one and is also the primary rate used to evaluate benchmarks and alternatives. The second rate, 7½ percent, was used to determine sensitivity of the preferred alternative to the discount rate by solving FORPLAN land designations at 7½ percent (FSM 1971.5, r-1, id No. 7). A summary of this information is included in Chapter II. Also, the PNV of all benchmarks and alternatives was recalculated at 7½ percent for comparison purposes. All costs and benefits were discounted from the midpoint of the planning period.

b. Real Dollar Adjustments

All prices and costs are expressed in first quarter 1978 dollars, consistent with the 1980 RPA. The Gross National Product (GNP) implicit price deflator index was used to inflate or deflate price and cost data to this common base (FSM 1971.32b).

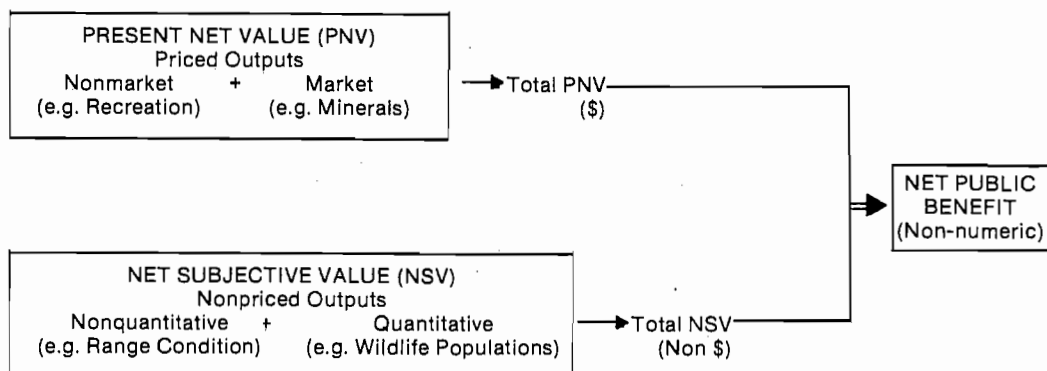
2. Costs Used in PNV

All agency costs were estimated for the 75-year planning period for all benchmarks and alternatives. This section discusses how costs were developed, the major expenditure categories, funding source, and the actual costs by resource.

a. Cost Development Process

Costs were developed by Forest personnel in conjunction with developing standards and guide-

FIGURE B-1



lines for management prescriptions. The resource workgroups estimated costs for every management activity. The costs were based on historical data and professional judgment, and approximate the minimum funds needed to achieve the standards and guidelines in the management prescriptions. Cost data was used in developing feasible and cost-efficient prescriptions.

These data were then used in development of the several alternative. The alternatives' costs were then disaggregated back to a Forest budget. One alternative was further developed by the management team, based on where they foreseen the Forest would be in the future. The costs for this alternative were then disaggregated to the District level. The management team then looked at these costs, and at the resource programs needed to achieve the outputs generated by the model, and then developed a budget that would meet the output levels and reflect total program costs. At this point, cost per unit were adjusted and programs leveled out across Districts. Support costs were evaluated to insure that the funding would be equivalent to the resource program that it was supporting. Once the management team finished the task, resource costs per unit were again defined by District. The redefined values were then converted to first quarter 1978 dollars and entered into the model. Table B-4 shows the Forest developed budget that was used in developing the unit cost. It relates funding item by decision variable in 1983 dollars. Table B-5 shows how the Forest decision variable totals were disaggregated into supervisor office support and District budgets.

Decision variables relate to Forest program elements such as range, recreation, wildlife, etc. Three types of cost can exist within a decision variable: direct, resource coordination and support.

1) Direct costs are the costs of those activities that directly contribute to the production of the primary output of the particular decision variable. An example of a direct cost would be Timber Sale Prep. activity costs for sawtimber production in the Timber decision variable.

2) Resource Coordination costs are the costs from other resource program elements needed to produce the primary output of a given decision variable in an environmentally acceptable way and/or to mitigate short-term impacts. These costs must be incurred before all or some of the direct or induced outputs can be realized and/or adverse side effects mitigated, e.g., soils/hydrologic support activities from the Water program element are necessary to achieve timber outputs on sensitive or fragile watersheds.

3) Support costs can be divided into separable and joint costs. Separable cost are

those support costs that can be directly assigned to the production of outputs in a resource decision variable. As an example, fuel treatment and fuelbreak costs designed to protect a high values timber area would have all or a portion of those protection costs assigned as a separable costs to the Timber decision variable. Usually, if a resource decision variable directly benefits from the support, it should be assigned all or a portion of the separable cost. Similarly, all separable costs, such as arterial and collector road construction activities primarily used to support timber sales, need to be described in the Timber decision variable. Joint costs are defined as the support costs which serve multiple objectives and cannot be directly identified with the production of outputs in any specific resource decision variable. Only joint costs should be included in the joint support decision variables (Items P10 thru T10 below). The following is a crosswalk from decision variables to program elements:

Decision variable	Program element
Resources	
A10	Recreation
B10	Wilderness
C10	Wildlife
D10	Range
E10	Timber
F10	Water
G10	Minerals
H10	Rural Community & Human Resources
Support	
P10	Protection
J10	Lands
L10	Facilities
S10	Soil, Air, & Water
T10	General Administration

Joint costs and resource costs that could not be assigned to a given resource output were lumped together by District to obtain a unit cost per acre. Supervisor office cost that could not be assigned to a given resource output were distributed evenly across the Forest to obtain a cost per acre.

Some exceptions to the cost development were in the mineral activity costs and the resource multiple-use and maximum prescriptions. The costs here were based on activities expected to occur for range and oil and gas activities. Recreation and wildlife program costs were increased on a percentage basis, since they increased as the intensity of management increased. Minimum level costs were developed using activities that were expected to occur to meet the minimum management requirements to protect the resources.

Costs dependent on land designation and timber harvest schedules were modeled in FORPLAN by entering them in the economic tables. By solving FORPLAN to maximize PNV, the cost-efficient level of agency expenditures for each designation

TABLE B-4
FUNDING ITEM BY DECISION VARIABLE
1985 M DOLLARS

FUNDING	ELEMENT*	DECISION VARIABLES**											FE			
		A10	B10	C10	D10	E10	F10	G10	G20	H10	J10	L10	P10	S10	T10	TOTAL
00	GENERAL ADMIN														1,799	1,799
01	FIRE PROTECT	11	7	7	10	9		13	5		13		435			510
02	FIRE P(FUEL)		4	2	11	7					3		85			112
03	TBR PREP/ADM	6		10	14	219	2	5			11		2			269
04	TBR RES PLAN					5										5
05	TBR SILV EX					58										58
06	RANGE	6	2	15	1,346	7	11	40	13		47	5		5		1,497
07	RGE-NOX WDS	1	2	2	276	17	2	3	1		1	1	1	1		307
08	MINERALS	7	6	12	18	3	4	866	135		45	9	1			1,106
09	RECREATION	259	46	4	85	17	6	40	6		30	4	4			500
10	WILD&FISH	6	7	229	91	22	6	46	12		12	2	2	1		436
11	SOIL&WATER	6	4	5	50	17	639	46	12		10	4	5	193		991
12	MTCE-FACIL											70				70
13	SPEC USES										250					250
14	GEOMETRONICS											0				0
15	LND EXCH-OWN	19		4	3	3					70	9				108
16	LLL-LND STAT				22	40		48	2		74	14				200
17	ROAD MTCE	145				43						238				426
18	TRAIL MTCE	24	46													70
19	COOP LAW ENF	29														29
20	REF/TSI-REF					8										8
21	REF/TSI-TSI					62										62
22	REF/TSI-NURSERY					0										0
23	TREE IMPR					19										19
25	SCSEP									5						5
26	KV-REFOR					6										6
27	KV-TBR STD-I					29										29
28	KV-OTHER					15										15
29	CWFS-OTHER					5										5
31	BRUSH DISP					46										46
32	RGE BETTERMT				369											369
33	CONS-REC FAC	82														82
34	CONS-FAO FAC											286				286
35	RD CONST ENG	14				97		164	14		29	132				450
36	RD CONST CI	65				188										253
37	CONS-TRAILS	26	10													30
38	PURC. CREDIT					40										40
42	LAND STATUS										10					10
43	LAND ACQUIS	10														10
TOTAL		716	134	290	2,295	982	670	1,271	200	5	595	774	535	500	1,799	10,466

*Line items in which funds are received to the Forest

**Program Components:

A10 = Recreation

B10 = Wilderness

C10 = Wildlife & Fish

D10 = Range

E10 = Timber

F10 = Soil, Water & Air

G10 = Minerals(Energy)

G20 = Minerals(Nonenergy)

H10 = Rural Com. & Human Res.

J10 = Lands

L10 = Facilities

P10 = Protection

S10 = Soil, Water & Air

T10 = General Admin.

TABLE B-5
DECISION VARIABLE BY DISTRICT AND SUPERVISORS OFFICE
1983 M Dollars

DV	SO Supv. Office	D1 Sheneyenne	D2 Beartooth	D3 Sloux	D4 Ashland	D6 Grand River	D7 Medora	D8 McKenzie	TOTAL DV
A10	319	17	267	28	24	2	33	25	716
B10	14	0	120	0	0	0	0	0	134
C10	78	5	74	27	24	7	31	44	290
D10	531	278	70	153	369	101	488	305	2,295
E10	449	4	75	262	187	0	3	3	982
F10	72	9	19	66	195	26	134	151	670
G10	451	0	19	24	36	12	374	354	1,271
G20	84	2	40	5	13	5	28	22	200
H10	5	0	0	0	0	0	0	0	5
J10	463	8	26	18	27	10	23	21	595
L10	469	7	65	32	53	14	68	67	774
P10	182	6	50	79	182	5	15	15	535
S10	83	4	27	8	21	8	24	26	200
T10	1,242	62	73	55	80	70	113	115	1,799
TOTAL									
UNIT									
BUDGET	4,441	402	925	756	1,210	259	1,335	1,148	10,466

was estimated for 75 years. The actual cost data are discussed later in this section. More detailed information on data sources and FORPLAN modeling procedures is in the Forest planning records ((42) 1922.14b).

b. Cost Categories

Three classes of costs were used: fixed Forest Service costs, variable Forest Service costs, and cooperator costs (FSM 1971.52).

Fixed costs are the minimum expenditures necessary to meet legal requirements of ensuring public safety and environmental protection. These costs are defined by the minimum level benchmark and are \$1.4 MM/year. These costs do not vary by alternative and do not affect land management decisions. The costs include fixed ownership requirements and general administration.

Variable costs vary with the controlled output level specified in each benchmark or alternative. They include capital investments (the costs of creating or enhancing capital assets over time), planning and inventory, and operations costs (including annual costs of administration, management, and protection of existing resources and capital assets). Variable costs include the costs necessary to meet minimum management requirements which are in the standards and guidelines of planned activities.

Agency cooperator costs (i.e. logging costs) are reflected in the output prices and are not directly treated as a cost.

In most cases, expenditures are appropriated through the normal federal budget procedures. Three exceptions are in-kind payments, special collections and conservation practices on the National Grasslands. Road construction and reconstruction which are performed by timber purchasers are deducted from timber receipts. Second, most of slash disposal, site preparation, and reforestation costs following timber harvest are financed through special collection brush disposal and Knudsen-Vandenburg funds. Capital investment programs on the National Grasslands fall under the conservation practice dollars which are related to the grazing fees. These funds are not appropriated, but controlled through other legislation and policies. This is a cost to the range decision variable, and it is reflected in the unit cost for the range output on the National Grasslands.

c. Cost Increases

None of the basic unit costs are expected to increase above inflation over time. However, the average unit costs of many activities will increase through time, as more expensive management activities are scheduled. For example, the average road construction cost increases in the first few decades as the more rugged land classes are accessed.

d. Cost Data by Resource

Costs are associated with each resource output for timber, range, recreation, wildlife and minerals. Nonseparable costs are not separated into resource, e.g., road maintenance, fire protection, and general administration. These costs were assigned to their own scheduled output within the model.

Calculating present net value by individual resource is misleading because the costs include expenditures required to produce, enhance, or mitigate more than one resource. Also, some costs are nonseparable in that they can not be allocated to any individual resource. For example, range costs may contain a cost to mitigate wildlife quality. This cost appears in the range category. Thus, the costs by resource output do not always have a direct relationship with the benefits by that resource.

The decision variable concept was used to develop the monetary costs used in the FORPLAN model. The concept assumed that dollars needed by a given resource to effectively manage that resource and meet the minimum management requirements of other effected resources would be available. The major cost would be contributed by the main resource, with additional supportive costs being contributed by other resources and support services. Sometime four and five levels of costs were developed for priced resources, to reflect the unit costs associated with the different levels of management intensity. The "Cost Per Unit" tables show the cost per level of management intensity, defined by the management prescription (second word in the prescription name). These levels also varied by District, which reflects the level of fixed costs and economies of scale.

Oil costs were handled in a little different manner, in that one of the scheduled outputs was dedicated to reflect the field costs of oil administration. The costs handled in this output were the mineral administration dollars, land ownership management, and coordination support for range and wildlife. The additional mineral cost were handled in the other dollar outputs and amounted to about 12 percent of the total other dollars category.

TIMBER ACTIVITY COST PER UNIT OF MEASUREMENT

Timber/ District	Harvest cost/ MCF	Harvest cost/ Acre	Road cost	Site Prep.	TSI
Beartooth	92.49	215.17	175.18	53.38	210.00
Sioux	88.84	112.49	169.26	25.78	112.10
Ashland	89.88	147.02	172.02	24.99	114.00

COST PER UNIT OF OUTPUT BY DECISION VARIABLE

Decision Variable/District	Levels of Management Intensity*					
	1	2	3	4	5	6
Recreation						
Sheyenne	.11	.11	.92	1.10	—	—
Beartooth	.01	.01	.60	.72	—	.84
Sioux	.00	.00	.76	.91	.76	—
Ashland	.00	.00	.70	.91	.70	—
Grand River	.00	.00	1.11	—	—	—
Medora	.21	.21	.98	—	—	—
McKenzie	.00	.00	.75	—	—	—
Wilderness						
Forest	.01	.01	.70	.70	—	—
Wildlife						
Sheyenne	.00	.00	1.02	1.22	—	1.43
Beartooth	.00	.00	.36	.43	—	.50
Sioux	.00	.00	.45	.54	.63	.63
Ashland	.00	.00	.48	.58	.67	.67
Grand River	.00	.00	.89	1.07	—	1.25
Medora	.00	.00	.40	.48	—	.56
McKenzie	.00	.00	.38	.46	—	.53
Range						
Sheyenne	.00	1.17	3.54	3.54	—	19.46
Beartooth	.00	1.45	3.12	3.12	—	3.12
Sioux	.00	.90	2.21	2.21	36.78	47.80
Ashland	.00	.45	1.81	2.29	32.92	48.93
Grand River	.00	1.18	2.06	2.06	—	37.04
Medora	.00	.86	2.59	2.59	—	39.31
McKenzie	.00	1.42	1.94	1.94	—	30.63
Other dollars						
Sheyenne	.84	.84	1.92	1.92	—	1.92
Beartooth	.45	.45	1.33	1.33	—	1.33
Sioux	1.02	1.02	2.20	2.20	2.20	2.20
Ashland	.67	.67	1.95	1.95	1.95	1.95
Grand River	.68	.68	1.50	1.50	—	1.50
Medora	.43	.43	1.56	1.56	—	1.56
McKenzie	.45	.45	1.59	1.59	—	1.59

- * 1 = Unconstrained
 2 = Minimum level
 3 = Moderate level
 = Current level
 = Unit Plan level
 4 = Multiple-use
 5 = Timber Maximum
 6 = Other Resource Maximum

3. Benefits Used In PNV

All modeled priced benefits were estimated for the 75-year period for all benchmarks and alternatives. Priced outputs include those resources that are or could be exchanged in the market place which included timber, range, recreation and oil. This section discusses the methods used to estimate current and future values.

The prices used in the analysis reflect onsite values for all resources, i.e., the value of the resource on the Forest. The values are consistent with cost estimates for activities which produce onsite resources. Benefits are classified as market values (timber, range, minerals) or non-market values (recreation). Receipts serve as a base for the 25 percent fund payments to local governments. Finally, some of the benefits are fixed. These benefits are associated with the minimum level benchmark and are the benefits associated with no active management.

a. Timber Benefits

The value assigned to timber reflects the onsite value to the Forest Service of the stumpage. With

the exception of sales currently under contract, stumpage is a variable benefit. The value is the difference between the lumber price and production costs of logging and milling. The price varies by species, diameter at breast height, net volume per acre, and logging systems. The values used in FORPLAN were developed by analysis of Forest-specific timber date.

Stumpage values represent both the benefit value to the taxpayer as well as the actual receipt to the US Treasury. All timber outputs from the Forest are expected to be consumed. The expected real price of lumber is projected to increase faster than the real price of lumber production. Therefore, the real price of stumpage is also projected to increase. The price indices from Haynes and Adams, (1980) are given below:

PRICE INDICES FOR TIMBER OUTPUTS

Decade	Lumber Price Index	Production Cost Index
1	114.5	111.8
2	142.5	136.5
3	165.3	150.9
4	186.3	154.7
5	207.3	158.1
6	218.8	159.5

The stumpage values used for timber varies by species, diameter and harvest method. The "Timber Value" table shows this relationship and also indicates the stumpage value.

The demand curve for timber was assumed to be horizontal; therefore, no downward sloping demand curve was used in the FORPLAN computer model. None of the available techniques for developing Forest level demand functions have a strong enough theoretical basis. (Downward Sloping Demand Curves; Reid, 1981 February 12.)

b. Range Benefits

The value assigned to range forage reflects potential dollar returns from the range resource to the taxpayers, even though only part of the price is actually collected by the Forest. The price is the net value to the rancher above the cash costs for grazing on the Forest. The value on the Forest varies by District, due to distances between Districts and to the local demand for grazing land. This price is expected to increase in the future as demand for red meat consumption increases. Future values for Districts in dollars per AUM are shown in the "AUM's Real Price Increases" table.

Because all forage outputs from the Forest are expected to be consumed, all forage outputs are priced. Receipts from the grazing program are fees paid by the permittee. The receipt value used for the National Forest was \$1.79/AUM and the value used for the National Grasslands was \$2.73/AUM.

**TIMBER VALUE BY DIAMETER AND STUMPAGE
VALUE PER MCF
1978 First Quarter Dollars**

Diameter	Timber Price	Production Costs	Stumpage Value
Ponderosa Pine			
100 percent tractor			
8	537.61	490.01	47.60
9	635.39	579.10	56.29
11	781.98	712.74	69.24
13	904.17	824.10	80.70
15	1001.92	913.19	88.73
17	1075.23	980.01	95.22
19	1099.66	1002.29	97.37
100 percent cable			
8	537.61	591.21	-53.60
9	635.39	698.70	-63.31
11	781.98	859.94	-77.96
13	904.17	994.30	-90.13
15	1001.92	1101.79	-99.87
17	1075.23	1182.41	-107.18
19	1099.66	1209.28	-109.62
30 percent tractor and 70 percent cable			
8	537.61	560.85	-23.24
9	635.39	662.82	-27.43
11	781.98	815.78	-33.80
13	904.17	943.24	-39.07
15	1001.92	1045.21	-43.29
17	1075.23	1121.69	-46.46
19	1099.66	1147.18	-47.52
Mixed Conifers			
100 percent tractor			
9	684.24	623.64	60.60
11	757.55	690.46	67.09
13	781.98	712.74	69.24
15	806.42	735.01	71.41
17	830.86	757.28	73.58
100 percent cable			
9	684.24	752.44	-68.20
11	757.55	833.06	-75.51
13	781.98	859.94	-77.96
15	803.42	886.81	-83.39
17	830.86	913.68	-82.82
30 percent tractor and 70 percent cable			
9	684.24	713.80	-29.56
11	757.55	790.28	-32.73
13	781.98	815.78	-33.80
15	803.42	841.27	-37.85
17	830.86	866.76	-35.90

The value of the range program associated with the minimum level benchmark is the value of the current program on allotments, up to the time they expire. The value in other benchmarks and alternatives is calculated by applying the appropriate prices to the livestock forage schedule in

FORPLAN. The benefit value modeled in FORPLAN was adjusted by period through appending rows in the model to show the actual real price increases by planning period.

c. Recreation/Wildlife-Related Recreation Benefits

The value assigned to recreation reflects potential dollar returns to the taxpayers from recreation even though most dollar values are not actually collected by the Forest. The value is the difference between the total value of a recreation experience to the recreation user and the cost of participating. The prices vary by type of experience and are expected to increase in the future. Over the planning horizon, the real price increases for recreation and the associated cost increases averaged out at \$3.68 per recreation visitor day for the non-wildlife recreation activities. The wildlife-related activities were weighted as to types of expected activity by analysis area. This weighting was based on the Forest RIM report. These weight values were then adjusted to reflect the real price increase over time. Here again the weighted average was used. The following table indicates the range of values by District based on a wildlife and fisherperson user day.

**RANGE OF WILDLIFE-RELATED RECREATION VALUES
BY DISTRICT IN \$/WFUD**

District	Range of Values
Sheyenne	9.27 — 11.74
Beartooth	6.64 — 11.93
Sioux	10.34 — 11.14
Ashland	10.57 — 12.37
Grand River	10.58 — 12.86
Medora	9.11 — 12.68
McKenzie	9.11 — 12.68

WILDLIFE DOLLAR VALUE BENEFITS

Activity	Output WFUD'S	RVD Equivalent	Value 1978\$
Big Game use	1	.50	10.50
Nature Study	1	.25	7.25
Sport Fish use	1	.33	5.25
Waterfowl use	1	.33	8.00
Upland Game use	1	.33	8.00

AUM'S REAL PRICE INCREASES BY DISTRICT

Year	Sheyenne	Beartooth	Sioux	Districts Ashland	Grand River	Medora	McKenzie
1978	13.20	12.85	10.20	12.27	11.73	11.39	11.39
1985	13.73	13.36	10.61	12.76	12.20	11.85	11.85
1995	14.39	14.01	11.12	13.37	12.79	12.42	12.42
2005	15.05	14.65	11.63	13.99	13.37	12.98	12.98
2015	15.31	14.91	11.83	14.23	13.61	13.21	13.21

Recreation use was projected to increase on the Forest as the population in Montana, North Dakota and South Dakota increases. Since recreation capacity exceeds use projections, recreation use rather than capacity is valued, i.e., the value of the recreation resource is based on expected use rather than capacity.

Receipts from developed recreation and special use programs consist of fees paid at campgrounds and fees paid for special uses. Fees currently (1983) exceed \$90,000, with around \$35,000 coming from designated areas. The activity in these designated areas is expected to increase more rapidly than that in non-designated areas.

d. Minerals Benefits

Benefits from minerals are largely derived from leaseable and common variety minerals. The greatest benefits come from the leaseables. In the FORPLAN model, oil was modeled for the next 60 years and then only in terms of primary production. Several analyses were made to determine the value of oil. The final value agreed upon was \$13.96 a barrel in 1978 dollars, representing the in situ value of this resource. Other minerals were not valued in the model; however, coal underlying the Forest land was evaluated outside the model as to its availability and extent.

Receipts from the mineral program are fees paid for mineral leases and royalties. The return to the treasury for oil and gas royalties for 1983 was about 32 million dollars. The returns to the States totalled about 8 million dollars. These values are expected to decrease over the long-term.

Oil real price increases were adjusted in the model through appended rows. The values used are as follows:

Year	Value
1980	13.96
1985	15.91
1995	20.52
2005	25.13
2015	30.71
2025	37.41

e. Water

No monetary value was assigned to the water resource, and it was not modeled in the FORPLAN model. The reason for this was mainly lack of information at this time on water yields from a good portion of the Forest. However, water quality was evaluated in response to other resources activities. It is also realized that in the near future the demand for water will increase and its importance will increase substantially.

C. Net Subjective Value

1. Definition

The net subjective value is the total qualitative value of all resources or outputs whose value

cannot be measured in dollars. Market transaction evidence is not available for these outputs, and therefore no basis exists for making market value estimates comparable with priced outputs. Nonpriced outputs are valued subjectively. In general, as the subjective value of nonpriced outputs increases, the monetary value of priced outputs as measured by PNV decreases. The magnitude of the monetary value foregone is measured and displayed as an opportunity cost. "Net" implies that both nonpriced benefits and costs can occur.

The most important nonpriced outputs in this analysis are the outputs identified as employment, visual quality, wilderness, roadless, and water quality. There are additional important nonmarket items that are also very important such, as wildlife and recreation.

2. Nonpriced Outputs

This section summarizes major nonpriced outputs which are affected by changes in output levels, and includes what indicators were used to measure output changes.

a. Employment

Job and income stability are major nonpriced benefits of the ranching, timber and mineral extraction industries.

The forest products sector, even though it is a small program in comparison to many, is largely dependent on the Forest for raw materials. Changes in the timber harvest program on the Forest will influence jobs, incomes, and lifestyles directly in the forest products industry as well as indirectly in all sectors. Alternatives were designed to provide varying levels of timber harvest over time with minimum level constraints to support local mills.

Changes in designations by alternative that affect the number of acres available for oil and gas development as well as "hardrock" or locatable minerals directly effects employment opportunities. At present oil and gas development represents a large work force in North Dakota.

Range management practices, especially the number of permitted livestock, affects employment. Increased numbers of permitted livestock may not increase the number of ranchers, but the amount of labor needed to install structural and nonstructural range management facilities increase, as well as the seasonal employment work force to handle livestock.

b. Visual Quality

Visual quality is not a major issue on all Districts except on the Beartooth Ranger District. The Beartooth District is adjacent to the Absoraka Beartooth Wilderness, and many Forest users think they are looking at the Wilderness anytime they look beyond the foreground from most

Forest roads. Here the visual quality is important to their recreation experience.

On most of the National Grasslands the Forest user expects to see cattle, fences, windmills and other evidence of cattle management. However, most do not expect to see oil wells, evidence of pipelines, and many miles of red roads due to the red-colored scoria used as a surfacing material.

Existing Visual Condition Class 4 (disturbed) was tracked to help define the effects of management of the visual conditions of the Forest.

c. Wilderness and Roadless

There are about 258,000 acres on the Forest presently classified as "Roadless." There are many other acres that are not roaded but do not meet the established criteria for "Roadless" as defined at the National level. Many of the formally classified roadless areas are considered for roadless or Wilderness management in the alternatives. However, there are a number of formal and informal "Roadless" areas that will probably never be roaded, even though they are not designated to a roadless management strategy.

d. Water Quality

Water quality is a nonpriced benefit that is really only significant on the Beartooth Ranger District. Water quality and runoff on the remainder of the Forest is not significant and is not evaluated in detail. On the Beartooth Ranger District, most of the runoff is generated in the high country which is classified as wilderness, and therefore the effects of management on water quality are nearly insignificant.

e. Wildlife and Fish

Managing to maintain and/or improve wildlife habitat and carrying capacities is an important consideration on the Forest. Wildlife habitat indexes are included in the Forest model and converted to population numbers for display in the alternatives. Wildlife values are actually priced through the use of Wildlife and Fishing User Days (WFUD's).

V. Social and Economic Impact Analysis

A. Overview

The social and economic impact analysis estimates the relationship of Forest activities to people. Short-term impacts are of primary concern, with consideration given to longer term effects (over 10 years) occurring within the impact area.

Forest-related economic impacts on employment, income, and state and local government revenues are directly related to the social well-being of people in the impact area. Additionally, the population lifestyles, attitudes, beliefs, values, and social organization are linked to Forest management activities.

B. Impact Analysis Area

The Custer National Forest has a wide zone of influence, extending into four states, (Montana, Wyoming, North Dakota, and South Dakota). This area can be divided into four basic economic units.

The first and largest unit would be the Billings unit. This includes the Beartooth, Ashland, and Sioux Districts of the Custer National Forest. The resource flow from these Districts and the economic development of the Billings Unit cover the following counties:

Montana
 Golden Valley
 Musselshell
 Sweetgrass*
 Stillwater*
 Yellowstone
 Carbon*
 Rosebud*
 Treasure
 Bighorn
 Custer
 Powder River*
 Fallon
 Carter*
 Park*
Wyoming
 Park
 Bighorn
 Sheridan
South Dakota
 Harding*
 Butte
 Lawrence
 Meade
 Pennington

*Counties in which National Forest lands occur.

The second unit is the Bismarck, North Dakota unit, which includes the Medora and Grand River Ranger Districts. The following counties are covered by this Unit:

North Dakota
 Golden Valley*
 Billings*
 Dunn
 Stark
 Slope*
 Bowman
 Hettinger
 Adams
 Oliver
 Morton
 Grant*
 Sioux*
 Burleigh
South Dakota
 Perkins*
 Ziebach*
 Corson*

*Counties in which National Grasslands (under Custer management) occur.

The third unit is the Minot, North Dakota unit, which incorporates the McKenzie District and consists of the following counties:

North Dakota
McKenzie*
Williams
Mountrail
Ward

Montana
Richland

*County in which National Grasslands (under Custer management) occur.

The fourth unit hubs around Fargo, North Dakota. This unit, the Fargo unit, covers the Sheyenne Ranger District and the following counties:

North Dakota
Traill
Barnes
Cass
Ransom*
Dickey
Sargent
Richland*

*Counties in which National Grasslands (under Custer management) occur.

Based on these zones of influence, an input-output model was developed for the Forest in which the supply and demand relationships of these local economies were depicted.

C. Economic Impact Model

An input-output model (IMPLAN) was used to estimate the employment and income impacts of Forest outputs and activities. Direct, indirect, induced, and total impacts were calculated.

Economic input-output (I-O) analysis is a procedure for describing the structural interdependencies of a regional economy or impact area, and serves as a short-term predictive model for evaluating the impacts of shifts in Forest outputs and activities.

I-O analysis is based upon the interdependence of production and consumption sectors in the impact area. Industries must purchase inputs from other industries, and also purchase primary natural resources, for use in the production of outputs which are sold either to other industries or to final consumers.

Flows of industrial inputs can be traced via the I-O accounts to show linkage among the industries in the economy. The accounts are also transformed into a set of simultaneous equations that permit the prediction of economic effects resulting from changes in Forest outputs and activities.

I-O analysis is based on assumptions that limit the

accuracy of projections. Therefore, the numbers presented are relative indicators rather than absolute projections.

1. IMPLAN Data Base

The I-O model data base consists of (1) a national level technology matrix and (2) a county-by-county file of estimated activity levels for total gross output, six components of final demand, three components of final payments and employment for 466 industrial/business sectors. (See USDA Forest Service, 1983 for more information on the I-O model.)

The national technology matrix is based on a 1972 Commerce Department I-O model converted to an industry by industry basis and updated to 1977 using the RAS procedure (Clopper and others, 1974). The county level information is based on a 1977 data set constructed by Engineering Economics Associates of Berkeley, California.

Utilizing the national technology matrix and the regional control totals for the local impact area, a data reduction method was used to develop a regional input-output table. The method uses the property of "openness" displayed by regional economies compared with the national economy (Richardson, 1972). Smaller regional economies exhibit much greater tendencies or are more open to import and export influences than is observed at the national level. Based on the assumption that trade balances are the principal difference between national and regional purchase patterns, the supply-demand pool technique for data reduction was adopted (Schaffer and Chu, 1969).

2. Final Demand Expenditures

The I-O model translates Forest outputs and activities into employment and income impacts. An intermediate step is the translation of outputs into final demand dollars. Final demand expenditures are different from the values used in the efficiency analysis. Final demand expenditures represent the dollars spent by the final consumers of the finished products derived from Forest outputs. For instance, timber is processed into lumber which has a sale value at the mill. The sale value represents the amount of new money that will be directly generated for the local impact area. Even assuming that most of it is sold outside the impact area, local impact still occurs. The efficiency analysis examines only stumpage or the market value of the raw material that leaves the Forest.

This modeling step is accomplished by applying a final demand expenditure per unit of output to total outputs, and linking the resulting dollar amount to the sectors in which the direct expenditure takes place. This process determines the change that takes place in the existing economy. Expenditure information is contained in the planning records.

D. Base Year Alternatives and Benchmarks Employment and Income Information

Forest outputs for 1980 were identified and analyzed with the I-0 model to provide a base situation from which employment and income changes could be measured. Table B-6 contains 1980 outputs levels, employment and income amounts associated with 1980 outputs, and the response coefficients per unit of output. Table B-7 shows employment and income for alternatives and benchmarks.

1. Cash Flow to the U.S. Treasury

Cash flow to the Treasury are based on grazing fees (100 percent from the National Forest and 50 percent from the National Grasslands), royalties from oil production and receipts from developed recreation. Special use fees, timber revenues and revenue from common variety minerals were not calculated into the returns to the Treasury. The discounted receipts at 4 percent over the 75 year planning horizon ranges from a low of \$14 MM in Benchmark MIN to a high of \$746 MM in Benchmark PNV. Alternatives ranged from a low of \$379 MM in Alternative 8 to a high of \$725 MM in Alternative 3 and 7. The "Cash Flow to the US Treasury" tables display the discounted values at 4 percent of the returns to the US Treasury by Benchmarks and by Alternatives.

2. Cash Flow to Local Governments(State & County)

Cash flow to local governments from Federal revenues generated on the Forest are governed by many different legislative actions (1908 Forest Service Law, Bankhead-Jones Farm Tenant Act,

TABLE B-7
FOREST-RELATED PRIVATE SECTOR EMPLOYMENT AND INCOME FOR ALTERNATIVES AND BENCHMARKS (CHANGES FROM 1980 BASE LEVELS)

	Jobs		Income (MM1978\$)	
	Decade 1	Decade 2	Decade 1	Decade 2
Base 1980	4202		162	
Alternatives				
1	1980	795	103	24
2	3107	1895	147	58
3	3310	2150	150	61
4	2856	1676	131	42
5	3107	1887	142	54
5a	3158	1881	142	50
5b	3125	1922	141	53
5c	3103	1921	140	54
6	3120	1849	145	54
6a	3168	1932	144	56
6b	2994	1642	142	48
7	3186	1894	148	58
7a	3094	1775	146	55
7b	2980	1678	140	49
8	725	-89	23	-35
9	3105	1861	145	54
10	2772	1566	129	41
Benchmarks				
PNV	3747	1980	178	59
OIL	3576	1632	172	56
RGE	3855	2450	136	55
RVD	3296	1206	136	33
WLD	837	-160	55	-12
CUT	1636	215	96	10
CUF	2259	1041	106	21
TMA	1762	523	85	8
TAC	3391	1498	173	52
TBC	3417	1496	174	52
TSE	3409	1519	173	53
WAL	2733	841	147	27
NWN	3391	1497	173	52
MIT	3087	1008	167	40
MIN	-2071	-2115	-106	-122

TABLE B-6
FOREST OUTPUTS AND IMPACTS IN 1980

Output	Units	1980 Production	Employment			Income		
			Direct Jobs	Total Jobs	Jobs/Unit	Direct M\$	Total M\$	M\$/Unit
Softwood sawtimber	MMBF	1.500	6.930	24.548	16.365	.148	.488	.325
Picknicking	MRVD	30.200	12.654	32.012	1.060	.219	.687	.023
Camping	MRVD	218.800	21.005	40.040	.183	.295	.683	.003
Skiing	MRVD	50.300	.455	240.233	4.776	1.1160	3.479	.069
Water-based recreation	MRVD	6.100	.049	8.619	1.413	.054	.138	.023
Dispersed non-motor. Rec.	MRVD	167.500	98.490	202.843	1.211	1.023	3.038	.018
Dispersed motorized Rec.	MRVD	137.000	81.515	167.003	1.219	.788	2.434	.018
Big-game hunting	MRVD	53.500	45.850	100.152	1.872	.615	1.644	.031
Small-game hunting	MRVD	42.400	15.730	33.114	.781	.220	.575	.014
Nongame wildlife	MRVD	13.600	7.154	13.886	1.021	.060	.190	.014
Fishing	MRVD	48.000	12.096	2.128	.461	.141	.346	.007
Cattle	MAUM	873.400	142.299	824.112	.944	3.405	19.695	.023
Sheep	MAUM	2.300	1.111	6.953	3.202	.027	.163	.071
Coal	MTON	.000	.080	.000	.207	.004	.000	.007
Oil and gas	MEOB	7344.000	514.080	1652.400	.225	73.440	101.935	.014
Locatable Minerals	MTON	.000	.146	.000	.284	.005	.000	.007
Common Minerals	MTON	.000	.049	.000	.096	.001	.000	.002
Cap. Inv.,OP,MT, Admin.	MM\$	1.790	26.850	55.490	31.000	.501	1.056	.590
NFS Salaries	MM\$	3.540	77.880	145.140	41.000	1.345	2.620	.740
Total			1066.577	3580.567		83.500	139.475	

CASH FLOW TO THE U.S. TREASURY DISCOUNTED VALUES AT 4 PERCENT
(Values in millions of 1978 dollars)

Benchmark																
PNV	OIL	RGE	RVD	WLD	CUT	CUF	TMA	TAC	TBC	TSE	WAL	NWN	MIT	MIN		
746	748	606	653	514	567	611	556	759	759	760	688	759	760	14		
Alternatives																
1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9	10
626	723	725	668	704	693	696	697	708	708	701	725	719	699	379	711	661

**CASH FLOW TO LOCAL GOVERNMENTS (STATE & COUNTY) OVER THE
PLANNING HORIZON (75 YEARS) DISCOUNTED VALUES AT 4 PERCENT**
(Values in millions of 1978 dollars)

Benchmark																
PNV	OIL	RGE	RVD	WLD	CUT	CUF	TMA	TAC	TBC	TSE	WAL	NWN	MIT	MIN		
191	187	152	161	129	142	153	139	190	190	190	172	190	190	4		
Alternatives																
1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9	10
157	181	181	167	176	173	174	174	177	177	175	181	180	175	95	178	165

Mineral Leasing Act, Taylor Grazing Act, Payment-in-Lieu of Taxes Law, Refuge Revenue Sharing Act and the Five Percent Law (PL-82-136). Usually the cash flow to the states is based on a 25 percent of the Federal receipts. However, some of these laws and acts have different percentage rates ranging up to 50 percent of the revenue. For the purpose of state cash flow in this document, the 25 percentage figure was used.

While all the revenues from surface resources funnel through the Forest Service and 25 percent goes to the counties via the State Treasurers, the mineral revenues are channeled thru the Bureau of Land Management under the Mineral Leasing Act for Public Domain, irrespective of what Federal agency is responsible for the surface resources. Dollars under this law go to the State and do not go to the counties from which they originated (Planning Records: (42) 1922.24c)

The "Cash Flow to Local Governments" tables display the discounted values at 4 percent based on a 25 percent cash flow to the state of the Federal receipts. Here again this value is based on those revenues described under cash flow to the US Treasury. Revenues from oil makes up a large portion of the cash flow.

3. Forest Service Work Force

The work force employed by the Forest is influenced by the level of development, intensity of management and emphasis on the production of market and nonmarket goods and services. Increased intensity of management and investments increase the work-year equivalents (WYE). The weighted average salary for a WYE on the Forest expressed in 1978 dollars is \$15,914. Using this value to determine WYE, the data displayed in the "Custer Forest Work Force" table were developed for the first two decades.

CUSTER FOREST WORK FORCE
VALUES REPRESENT WORK-YEAR EQUIVALENTS CHANGES (+ or -) FROM BASE YEAR 1980
(1980 = 224 WYE)

Benchmark																	
Decades																	
	PNV	OIL	RGE	RVD	WLD	CUT	CUF	TMA	TAC	TBC	TSE	WAL	NWN	MIT	MIN		
1	58	206	1329	232	45	-36	99	259	88	93	85	65	88	65	-167		
2	58	152	1373	116	42	-49	102	206	90	87	89	67	90	58	-167		
Alternatives																	
Decades																	
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9	10
1	66	54	66	66	66	86	91	78	66	91	74	74	66	66	-40	62	50
2	72	107	91	82	86	103	111	95	70	99	82	127	111	107	-44	78	58

Based on the changes in the above tables it would take about 57 WYE to administer the Forest at a custodial level (Benchmark MIN). The high intensity of investment and management to produce the maximum range outputs would take a work force of 1553 WYE (Benchmark RGE). Based on the Alternative 8, the work force for a current level of management is around 184 WYE. Alternative 7, which represents a high level of market outputs, requires a work force of 351 WYE. The remaining benchmarks and alternatives fall between these ranges.

E. Social Measures

Social impact analysis estimates how Forest policies and actions affect the quality of life. Future social conditions if current management continued were compared with the likely results of implementing other alternatives.

Social impacts were measured by social variables and social groups. Social groups are those affected by Forest Service activities, and social variables define how people are affected and the relationship between people and the natural environment.

A social assessment examined social group reactions to three Forest management alternatives (current direction, moderate amenity, and moderate commodity). The social variables and groups used in the assessment are described below. A short summary of findings is also presented.

1. Social Variables

a. Lifestyles

Lifestyles are the characteristic ways different segments of a population live. People use Forest resources to maintain a way of living that is financially dependent upon a particular resource-related occupation. Ranchers, oil field workers, and local small town businessmen are examples. Without Forest resources, these people would have a difficult time maintaining their preferred lifestyle.

Another aspect of lifestyles is the more amenity-oriented activities in which people participate, such as hunting, fishing, backpacking, picnicking, berrypicking, and gathering wood. These activities are also dependent upon Forest resources, although the impact may be more subtle and less quantifiable than jobs or income. However, these activities are important to the lifestyle of many local, regional, and national people.

Lifestyles, and to some extent attitudes and organization structure, vary with such factors as age, occupation, sex, geographic area, ethnic heritage, and educational level. With some overlapping of categories, the important lifestyles of the Forest zone of influence include the following groups:

1) Livestock and grain ranchers and their families. They constitute 25 percent or more of the population and tend to exert considerable influence as landowners and long-term residents. Many favor transitional land uses and preservation of the intergenerational farm family. Ranching is viewed as the essential industry upon which the area economy is based, and as a very desirable lifestyle that should not be jeopardized by short-term development activities.

2) Long-established small town residents. They also account for 25 percent or more of the population. They consist of local businessmen and their employees, state, county, and municipal employees, and some self-employed professionals, plus the members of their families. Like ranchers, small town people tend to think highly of their way of life and wish to retain it. At the same time, many see connections between the health of the locality's basic industries and the quality of community life (adequacy of employment, business activity, community services, and tax revenues), and seek some compromise between gradual development and lifestyle preservation.

3) Native Americans. This category included at least six tribes with about 20,000 members in 1980. These tribes desire to preserve elements of their ethnic heritage, yet would also like to utilize their reservation resources, with a maximum social and economic return for the tribe members. There is seldom an adequate number and range of employment opportunities on or within commuting distance of reservation communities and levels of unemployment tend to be well above the state and national averages.

4) Minerals industry employment. Most have moved to the area primarily to take jobs in the petroleum or coal industries. Incoming workers are mainly young, single, or married with small children. Many oil and gas and construction workers regard their employment situation as temporary, and expect to move to other areas. Thus they do not usually play an integral part in community affairs. Exceptions include older skilled workers and supervisory personnel who remain in one place for an extended period, some of the employees in permanent facilities such as refineries and gas plants, and local-hire employees. Power plant and some mine workers are also long-term employees.

5) A fifth pattern of lifestyles or aspirations is evident among the apparently small but growing population of professionals, craftsmen, retirees, and others who move to particular locations in the Forests zone of influence in an effort to improve their quality of life. They have selected an environment that is scenic, restful, and relatively pristine. Some have accepted a reduction in income in order to escape the blight and stress of

urban areas. They intend to enjoy the more leisurely pace and the outdoor opportunities of rural life. Many of these people will resist development proposals which appear to jeopardize the quality of this new life experience.

b. Attitudes, Beliefs, and Values

Attitudes, beliefs, and values are reflected in people's likes, dislikes, perceptions, hopes, aspirations, and fears. Changes in Forest Service policy may result in practices that affect people's feelings about and understandings of the Forest.

First, this variable refers to the symbolic meaning people attach to the places and resources on or from the Forest. Although people may not be economically dependent upon the Forest, they may receive rational psychological benefit or symbolic meaning from resources.

There are several categories of people that may be easily identified as having discernable attitudes toward Forest programs. There are, for example, organized environmental groups, each with specific goals but with a shared concern about environmental quality and effects of industrial development. There are also the energy and construction industries and expanding sales and services firms that promote economic growth and equate development with progress and achievement. The majority of the populace see themselves as homemakers, ranchers, local government workers, students, teachers, clerks and secretaries, recreationists, and in many other role categories. They tend to have mixed feelings about changes that may affect the local economic base or existing cultural patterns. They are most concerned about the implications of such changes for the quality of their family and community life. Most rural residents have a lifestyle they wish to protect and perpetuate.

A second component is a sense of freedom from control by others, such as outside or government interference. People often view the lack of local control over resource decisions as a problem. Local control over programs or proposals is often perceived as limited or nonexistent because policies come from Washington.

A third is a feeling of self-sufficiency or the ability to live one's life in one's own way and use whatever resources are necessary to get along without any, or a minimum of, outside help. Certain quantities and qualities of Forest resources may be necessary for people to be independent.

Certainty and uncertainty, a fourth component, refer to the probability that certain things can be counted on in living a desired way. It refers to the lack of confidence (uncertainty) or confidence (certainty) people may have about being able to stay in a community because of the changes in use of resources, or because the resources are in limited supply. Ranchers and loggers are often

quite dependent upon the renewable natural resources for their livelihood. Oil field workers are dependent on the nonrenewable resources of the Forest.

c. Social Organization

Social organization is the way society and its subunits are structured. Major components considered here include community cohesion and stability.

Community cohesion is the degree of unity and cooperation among various segments of a community in realizing shared goals or solving problems. Changes in community cohesion can occur with an influx of people with different life philosophies. Issues can partition communities into factions and decrease community unification.

Community stability is the rate of change that people can accept without exceeding their capacity to deal with it. The rate of social change and the institutional structure of a community are key variables in the analysis of the effects of Forest Service actions.

Social stability and economic stability may not be the same, but both relate to community stability. Economic stability might be retained through full employment; but if there is a rapid change in the composition of the employment, such as was experienced by the sudden oil boom in North Dakota, social instability might result. Yet stability is not stagnation. Stable communities are usually going through relatively gradual and constant change and people adapt to new conditions.

2. Social Groups

The significance of the social variables vary by the communities and/or groups of people within communities. The communities or groups are people with common values and a similar way of relating to the Forest. The following items describe groups found within the Custer National Forests zone of influence.

a. Ranchers/Farmers

The more traditional agricultural-based people who have the basic values (self reliant and conservative) generally associated with ranchers/farmers of eastern Montana and North and South Dakota. Also those who were once ranchers/farmers but are now retired.

b. Loggers/Millworkers

Those engaged in the wood products industry. Traditionally they are known to be independent, commodity-oriented, and concerned over local control. Also those who were once loggers/millworkers, but are now retired.

c. Retired (Older)

The more traditional retirees who have retired on a pension and moved near the Forest because of the amenity values. Also local retired residents

who have an amenity orientation to resource management.

d. Professional

Doctors, lawyers, teachers, scientists, and government workers.

e. Newcomers (but not Older Retired)

Those who have moved because of the amenity and lifestyle values. Younger retirees, back-to-nature people, minerals associated people, and/or the whatever-we-have-to-do-to-stay-here group.

f. Business People

Business people who are involved in the more established, traditional, and "main street" business enterprises. They are often viewed as influential people who have strong community ties. Many are considered to be independent and conservative.

g. Regional Groups

People who live in Montana and North and South Dakota. Most regional people use and view the Forest from an amenity/recreational standpoint.

h. National Groups

People who have a direct or indirect interest in the management practices and/or outputs of the Forest land, but who are not in the local or regional zone of influence.

i. Minority and Civil Rights Groups

Native Americans who are concerned about and/or have ties to the Forest.

3. Analysis Process

Forest representatives have met and discussed proposed changes in Forest management with State Government representatives, industry groups, Grazing Associations, and other Forest users. To date there has been no area of social concern identified. A Social Impact Assessment of the impacts of oil and gas was done in 1981 to help define a data base to which future analyses could be compared.

VI. Analysis Prior to Development of Alternatives

A. Introduction

The primary analysis prior to developing alternatives is the analysis of the management situation—a determination of the ability of the Forest to supply goods and services in response to society's demands. This analysis provided a basis for formulating a broad range of reasonable alternatives by examining the following:

1. Benchmark analyses (Components of)

a. The minimum level of management with associated costs and benefits.

b. The maximum physical and biological production potentials of single resources as well as sets of resources, together with their associated costs and benefits.

c. The maximum present net value of resources with an established market value or an assigned value (a cost efficiency measure).

d. A defined point of reference from which the costs and effects of constraints are measured.

2. Analysis of the current and expected future level of goods and services if current management direction continued.

3. Projections of demand for goods and services.

4. Analysis of the potential to resolve issues and concerns.

5. Analysis of the need to change management direction.

The results of this analysis formed the framework within which alternatives were developed.

B. Development of Minimum Management Requirements (MMR)

The minimum management requirements as stated in 36 CFR 219.27 are as follows:

1. Conserve soil and water resources.
2. Minimize hazards from flood, wind, wildlife, erosion, and other natural physical forces.
3. Reduce hazards from pest organisms.
4. Protect riparian zones.
5. Provide diversity.
6. Provide fish and wildlife habitat to maintain viable populations.
7. Adhere to multiple use laws.
8. Protect threatened and endangered species habitat.
9. Provide for rights-of-way and corridors.
10. Develop road construction standards.
11. Revegetate temporary roads.
12. Maintain air quality.
13. Reforest in 5 years.
14. Limit openings to 40 acres.

The methods used to meet these minimum management requirements included:

- Developing standards and guidelines and appropriate practices for management prescriptions.
- Assigning of management prescriptions and intensities to analysis area in FOR-PLAN.

- Applying access, scheduled output and inventory constraints to analysis areas or groups of analysis areas in FORPLAN.

The 14 items listed above are discussed in more detail below:

1. Conserve Soil and Water Resource

The mapping and spatial fitting of FORPLAN outputs, local experience, and research indicate that timber harvest timing, intensity, amount and location, logging system and road density, fuel treatment and site preparation all effect soil productivity and water quality.

The reasons for and type of constraints needed to control the above activities and meet this MMR are as follows:

a. Timber Harvest Timing, Amount, and Location

Analysis of FORPLAN outputs and the spatial fitting of these designations showed that all alternatives can be applied on the ground as modeled. There are some areas where the timing of harvest activities will impact wildlife habitat, but not to the point of threatening a viable population. Soil and water resources are protected in all prescriptions that are allowed to go into the solutions of alternatives.

Soils and watersheds are assumed to be in a recovered condition when a vegetative cover has re-established sufficiently to protect the soil surface from erosive forces. Contributing to this is the live root biomass from shrubs, grasses, forbs, and new seedlings that are beginning to replace conifer roots of harvested trees, thus aiding in reinforcement of soils from mass failure.

The minimum time necessary for vegetative recovery is about ten years since the habitat types on this Forest that are considered suitable for timber management are shrub and grass understories, and reestablishment of full ground cover generally occurs within five years or less. Therefore, the risk of overcutting a particular area is very low on all but the Beartooth Ranger District, because most of the Forest is composed of large openings with scattered stands of timber mostly on north facing slopes.

b. Timber Intensity

Past experience and anticipated timber demands have shown that intensive timber management practices are not really justifiable for the foreseeable future on this Forest. Demand for increased grazing for domestic livestock is much greater than for timber, and the dollar return to the government is better from grazing than from timber. Therefore, very few intensive timber management practices come into the solutions of Alternatives, except in the timber maximization benchmarks.

Intensive timber management practices such as commercial and precommercial thinnings reduce the already scarce thermal cover for wildlife. In all the eastern portion of the Forest, thermal cover for big game is scarce, because much of the Forest is scattered timber and grasslands.

c. Logging System and Road Density

Most of the Forest that is suitable for timber management is on or adjacent to easily roaded ground. Road density will not become a problem unless the volume of timber to be harvested is increased several times over the traditional harvest level.

The type of logging system required varies by slope. Slope data are not included in the Forest model but are estimated by area to determine possible logging systems to be used. On an average, 70 percent of the Forest is suitable for logging by ground lead systems and 30 percent by cable systems. There have traditionally been no skyline or helicopter(aerial) logging operations on the Forest, and none are anticipated in the foreseeable future.

d. Fuel Treatment and Site Preparation

Fuel accumulations of logging slash after harvest may require some type of treatment to reduce risk of loss from wildfire. Preparation of sites is often necessary to assume adequate reforestation. Research has shown that some fuel treatment-site preparation methods can reduce soil productivity and water quality.

Various treatments were considered in the development of management prescription standards and guidelines.

The different methods of treatment that were considered were these: broadcast burn; underburning including pulling slash away from live trees; jackpot burning; hand piling and burning; mechanical preparation and burning; and hand scalping. The slash disposal method to be used is dependent on the silvicultural method used.

e. Watershed Condition Improvements

Part of the watershed program involves rehabilitating watershed damage due to unforeseen mishaps caused by management activities or due to natural occurrences. The greatest effect from management activities are in road construction and in timber harvest, and to some extent in livestock use. The acreage stated as needing treatment was based on average annual miles of roads constructed and on the volume of timber harvested under each alternative.

2. Minimize Hazards From Flood, Wind, Wildfire, Erosion, or Other Natural Physical Forces

The soil and water MMR discussed previously outline the standards, guidelines, assignments,

and constraints needed to minimize hazards from harvest, fuels, flood and erosion.

Wind can cause unnecessary damage to residual trees in timber sale areas if improper silvicultural systems are applied. This hazard is minimized by prescribing silviculturally sound systems by working group or habitat type. In most cases more than one system is provided, to assure proper field application.

Vast stands of sapling and pole sized lodgepole pine, such as those found on the Beartooth Face, can develop into heavy fuel, high risk, old-growth lodgepole pine if left untended. The future heavy fuels and high risk can be reduced by controlling the stocking in some of these stands. Commercial thinning of these stands by post and pole sales is the primary management tool that has been used, and is expected to continue, to break up these large stands.

3. Reduce Hazards From Pest Organisms

Trees on the Forest are susceptible to mountain pine beetle, spruce budworm, dwarf mistletoe, and other pest organisms. Rather than let the natural process create favorable conditions for these pest organisms, several different management practices are considered to help prevent hazards from pest organisms.

Silvicultural systems are used throughout the Forest to help maintain stand conditions that favor good stand vigor and reduce the susceptibility to insect and disease problems.

The grassland ecosystems of the Custer NF have historically supported varying populations of grasshoppers and Mormon crickets. These insects, while being an important source of food for some wildlife species, can cause serious problems on the range lands if left unchecked.

The Forest has undertaken some control programs in cooperation with grazing permittees, landowners, and the Animal and Plant Health Inspection Service (APHIS), in accordance with a Memorandum of Understanding dated June 4, 1980. Control has been through ground and aerial spraying of approved chemicals, funded and supervised by APHIS. The Forest Service is not responsible for actual control of insects in public rangelands, but is responsible for evaluating any proposed action to determine the impact the action will have on all resource values. The Forest's role involves coordination, cooperation and evaluation of range pest management techniques, and providing information. This role would essentially remain unchanged with any proposed management alternative.

4. Protect Riparian Zones

The riparian zones were used as analysis areas for assessing impacts and outputs. Minimum management requirements were developed by resource.

Range: Grass utilization in the riparian zone was set at 65 percent for bunchgrasses in good or better condition. No new range improvements would be located in the riparian zone (spring developments and salting areas). Existing developments that are located in the riparian zone would be moved out of the zone when replacement was needed.

Timber: The riparian zones were classified as unsuitable for timber management due to low volume of merchantable timber. Harvests on a limited scale in these areas would be restricted to that necessary for safety and for other resource needs.

Minerals: The riparian zones were protected through a no surface occupancy concept. Pipelines would not be allowed to be constructed in the riparian zone parallel to the hydrologic flow. Crossings could be made in the riparian zone, but always with minimum disturbance and perpendicular to the bottom if at all possible.

Roads: All road construction would be outside the riparian zones to the greatest extent possible. Small stretches of road could be constructed in the zone to obtain grade or for crossings. However, the intent was to minimize disturbance in the riparian/woody draw zones.

5. Diversity

Three of the four ecoregions that occur in Region 1 of the Forest Service occur on the Custer NF. Ecosystems on the Forest vary from the high alpine tundra in the Absoraka-Beartooth Wilderness, through lodgepole forests, aspen stands, ponderosa pine savannahs, short grass prairies and badlands, to eastern hardwoods and tallgrass prairies. Along with riparian zones and woody draws, this wide mixture of ecosystems represents an incredible diversity of types.

Vegetative diversity on timbered sites is complex. On most of the forested stands the trees are either mature or approaching maturity. Younger age classes are still widespread, and in some areas regeneration is extensive and is invading grasslands. Old growth is widespread throughout the Forest, and in some areas such as the Pryor Mountains is currently over-mature and is being lost to insects. Aspen which was once wide spread on the Forest has been drastically reduced through the control of fire and through ponderosa pine replacing the aspen stands. Timber harvest is designed to increase the diversity of stands by replacing some of the mature age classes with younger stands. Aspen stands that are being closed out by pine are a priority for treatment that is designed to regenerate aspen.

Grasslands provide a diversity of habitats through vegetative species and shrub age classes. Both livestock stocking and wildlife use if at proper levels, will not radically alter vegetative species

composition. Residual Nesting Cover (RNC) is a measure of the residual growth of the previous year's herbaceous species. Where RNC is provided, all species that require tall grasses as part of their habitat requirements will be benefited.

6. Adequate Fish and Wildlife Habitat to Maintain Viable Populations

Habitat indicator species were selected as indicators of the wide variety of ecological communities present on the Forest. The species selected represent groups of fish and wildlife species that have similar habitat requirements.

Minimum viable population for fish species were provided for by the MMRs applicable to riparian/-woody draw zones, soil and water resources and habitat diversity requirements.

Constraints such as limited surface occupancy, and constraints on timber harvests and livestock utilization rates in the riparian/woody draw zones will provide for minimum viable populations of indicator species for each ecogroup and for other species which have similar habitat requirements.

Species that have RNC requirements as a major habitat component are provided for under the considerations for livestock grazing and management systems.

Wildlife species that utilize old growth timber stands are provided for under the MMR's for timber harvest, coordinated with the requirements for wildlife. Old growth stands may be logged, provided that recruitment is provided.

7. Consistency with Multiple Use Laws

The Secretary of Agriculture under various laws is directed to administer National Forests for multiple uses such as outdoor recreation, range, timber, watershed, wildlife, fish, and minerals. The Secretary is also directed to develop and administer the renewable surface resources.

The forest planning and environmental analysis process used requires, as a minimum, that the processes formerly used to make individual resource decisions must be combined into integrated management decisions.

Management prescriptions used in the development of the various alternatives provided for meeting the minimum management requirements and are consistent with multiple use management.

8. Protecting Threatened and Endangered Species Habitat

Grizzly bears, peregrine falcons, blackfooted ferrets, and grey wolves are the primary threatened and endangered species of concern on the Forest. Protection of habitat for these species was considered as a necessary minimum management requirement in all management prescriptions. Habitat for these species, as well as survey

techniques, are defined in various background reports and in the management plan.

9. Providing for Utility and Transportation Rights-of-Way and Corridors

Land disturbing activities such as timber harvest, land clearing, road construction, pipeline trenches and holes for power poles occur when providing rights-of-way. The suitability of various areas on the Forest for utility corridors was considered in the development of the Forest Management Plan. Areas designated to roadless management were considered avoidance areas, and wilderness areas were considered as exclusion areas. Nearly the entire Forest was restricted in that only small lines would be permitted unless justified by a project-specific environmental impact statement.

10. Road Construction Standards

Access roads are necessary for efficient timber harvest and for the removal of oil and gas. Road construction affects the soil, water, visual, and riparian resources. Safe road conditions for public use are necessary.

The adverse effects of a minimum standard road on sites with sensitive soils on slopes over 60 percent are not environmentally acceptable. Increasing the standard, such as requiring full bench construction versus cut and fill, dramatically increases costs.

Minimum road design considered type of road, clearing width, width of road, and grades. Roads are categorized into two types—collector and local.

Clearing widths are established for the top of the road cut and for the toe of the road fill. No major difference in costs occurs between collector and local roads for clearing. Steeper slopes require larger clearing widths and increased costs.

The width of local roads influences costs. The standard established is 12-foot width for rock surfaced roads and 14-foot width for unsurfaced roads. Narrower road widths are not considered because of logging equipment requirements and safety. The costs for this standard vary depending on the land (slope) type.

The grades of roads vary by road type. Collector roads are established at a maximum 6 percent sustained grade, with some pitches to 10 percent. This percentage is based on traffic volume, road maintenance costs, construction costs, and the effects on soil and water. Local road grades are established at a maximum 8 percent sustained normal width with pitches to 15 percent. Steep pitches are considered exceptions. A grade up to 15 percent is used, rather than the 8 percent, in those situations where less impacts on soil, water, and visual resources are possible.

Mitigating measures are required for newly constructed roads and for road maintenance, to help maintain water quality and reduce damage to stream fisheries by limiting the amount of sediment that enters the streams. Some measures applied to all roads, while others are for specific sections such as within riparian zones or within sediment-contributing areas adjacent to active channels. The sediment mitigating guidelines for roads are on file in the Forest planning records.

11. Revegetating Temporary Roads

Short temporary roads that are sometimes needed to efficiently transport logs and as temporary access to drill sites can affect soil and water resources. The road density for the Forest's transportation system, and the log skid distances, are designed to preclude the use of temporary roads in most cases. The minimum requirement is to re-establish forage or grass cover by seeding. Revegetation was included in the logging practices for prescriptions that harvest timber.

12. Maintaining Air Quality

This requirement is handled outside of FORPLAN. The Regional Guide directs the Forest to work through cooperative agreements with the States to manage smoke emissions. Scheduling the time and number of prescribed burns is done outside the FORPLAN model and in cooperation with States.

Chemical air pollution is a serious problem resulting from oil and gas production, where high volumes of hydrogen sulfide occur in the gas. Coordination to characterize and control the problem is through the respective State Air Quality Division, and through the Environmental Protection Agency which has ultimate authority. The Forest may also set stronger air quality stipulations in drilling permits.

13. Reforestation

In order to have reasonable assurance of regeneration, sound silvicultural systems are designed by and/or must be approved by a certified silviculturist. Natural regeneration is the preferred method of reforestation on the Forest, because planting is expensive and the results are uncertain. Planting is used to provide a mixture of species in some areas to reduce the susceptibility of the area to insect and disease damage. Site preparation is required on most sites because competition from grass and shrubs generally increases rapidly after the overstory of trees is removed.

14. Forty-Acre Clearcut Limit

Clearcutting is one silvicultural system used on the Forest for even-aged timber harvest. The Regional Guide establishes that the openings created by even-aged silviculture normally will be 40 acres or less. Costs and practices used are based on clearcuts of 40 acres or less and are included in the management prescriptions.

C. Benchmarks

During the analysis of the management situation, resource supply potentials were estimated using various objectives, constraints, and assumptions in FORPLAN. The capability to supply various resources was determined by establishing minimum and maximum production levels of single resources. These levels were established with limited minimum management requirements for soil, air and water. In addition, production capabilities were determined for a set of multiple-resource outputs that maximized present net value. A timber sensitivity analysis was also made. These analyses established the "benchmark" levels required by the National planning direction.

Fifteen benchmarks were developed to define the production potentials and economic relationships of the Forest. The optimal schedule of management activities, resource outputs, environmental effects, economic consequences, and land designation to meet the purpose of each benchmark were estimated. The major objectives and constraints were displayed in Table B-8.

Four types of benchmarks are developed for the Forest:

1. Resource benchmarks: These define the maximum potentials for each resource modeled. They include maximization of timber, range, oil, recreation, wildlife, wilderness and roadless resource.

2. Maximum present net value benchmarks: These maximize the present net value for the Forest and display the associated resource outputs.

3. Minimum level benchmark: This displays the minimum outputs associated with custodial management of the Forest and the unavoidable costs and benefits of public ownership. This benchmark reflects that there is no induced outputs from the Forest.

4. Sensitivity analysis: Sensitivity analysis were run for three major situations: (1) Timber, to determine the effects of nondeclining yield and culminating mean annual increment; (2) Current management, to determine the effects of present budget level on production of outputs as related to current direction established by existing plans; and (3) Wilderness, to determine the effects of wilderness on levels of production of goods and services.

The following procedures applied to all benchmarks:

- a. Developed using FORPLAN.
- b. Developed using either an objective function to maximize a given resource or to maximize PNV (Max PNV Benchmarks and the sensitivity analysis runs).
- c. Not constrained by budget levels with the exception of the current sensitivity analysis.

ANALYSIS PRIOR TO DEVELOPMENT OF ALTERNATIVES

d. Complied with minimum management requirements of the basic resources of soil, air and water.

e. Required to be legally implementable, with the exceptions of minimum level which did not allow for the legal commitment of livestock grazing and mineral exploration, development and production.

f. Precluded timber management on 339,841 acres of existing wilderness.

g. Regulated timber management was constrained to preclude it from all unsuitable timberlands.

h. Timber harvest rotations were constrained to be greater or equal to 95 percent culminating mean annual increment.

i. Range improvements were limited to only suitable lands.

j. A constraint was used so that timber inventory in 75 years would equal or exceed the volume that is to be harvested during the last period of the planning horizon, with the exception of the high market.

k. Present net value and resource benchmarks determined the opportunity costs and resource tradeoffs of meeting specific constraints, objectives, regulations, and policies.

TABLE B-8
BENCHMARK OBJECTIVES AND CONSTRAINTS

Benchmark	Objectives	Objective Function	Harvest Flow	Timber Constraints	Range Constraints	Soil Water & Air MMR's	Other Constraints
PNV	Determine the highest possible PNV through the model. Considering only soil, air, water and vegetation MMR's	Maximize PNV using market and nonmarket values	None	None	None	Yes	None
OIL	Define maximum oil potential	Maximize OIL	None	None	None	Yes	None
RGE	Define maximum livestock potential	Maximize LIVFOR	None	None	None	Yes	None
RVD	Define maximum recreation potential	Maximize RVD	None	None	None	Yes	None
WLD	Define maximum wildlife potential	Maximize DEER	None	Ceiling 4MMBF	None	Yes	None
CUT	Define current situation with budget restriction and proposed timber harvest levels	Maximize PNV	Bounds +20 -10	1st period level 8.5 MMCF	None	Yes	Budget at current level. Rx limited
CUF	Define current future situation	Maximize PNV	Bounds +20 -10	1st period level 8.5 MMCF	None	Yes	Rx limited to Unit plan
TMA	Define maximum timber potential	Maximize TIMBER	NDY End. Inv.	Maximum harvest 1st period 100% CMAI	None	Yes	None
TAC	Define maximum timber potential at 100% CMAI	Maximize PNV	NDY End. Inv.	100% CMAI	None	Yes	None
TBC	Define maximum timber potential at 95% CMAI	Maximize PNV	NDY End. Inv.	95% CMAI	None	Yes	None
TSE	Define maximum timber potential using sequential bounds	Maximize PNV	Bounds +20 -10 End. Inv.	100% CMAI	None	Yes	None
WAL	Define maximum wilderness potential	Maximize PNV	NDY End. Inv.	None	None	Yes	659,525 acres of wilderness
NWN	Define maximum PNV with no additional wilderness	Maximize PNV	NDY End. Inv.	None	None	Yes	No additional wilderness acres
MIT	Define maximum PNV as defined by market values	Maximize PNV	NDY End. Inv.	100% CMAI	None	Yes	Valued only market goods
MIN	Define the cost level with no induced output associated with a minimum level of mgmt.	Maximize PNV	No harvest		None	Yes	No induced outputs

5. Brief Description of Benchmarks

a. Benchmark Maximum PNV (Maximize present net value)

This benchmark explored the opportunity to maximize the monetary value (cost efficiency) of priced market outputs (timber, range, oil, and developed recreation) and nonmarket resources (dispersed, wilderness and wildlife recreation). It defined the "mix of resource uses, combined with a schedule of outputs that have an established market place or are assigned a monetary value" as required by CFR 219.12(e) and Chief's letter May 31, 1983. Minimum management requirements were met. There were no constraints on the timber harvest volume or flow. This benchmark provided the basis for evaluating the economic tradeoffs. It also provided the basis for analyzing the sensitivity to nonmarket goods and services to market goods and services. And it provided the basis for determining opportunity costs between comparable benchmarks and alternatives which were developed using different constraints.

b. Benchmark OIL (Maximize oil production)

This benchmark explored the opportunity to maximize the oil production on the Forest. Wilderness areas were excluded from oil production through management prescriptions. Minimum management requirements for soil, air, and water were met in the prescription development.

c. Benchmark TMA (Maximize timber harvest)

This benchmark explored the cost of providing a high level of timber harvest in the first period (5 years). It also explored the maximum legal capability of the Forest to produce timber under a nondeclining yield. Timber production was maximized in decade 1, based on nondeclining flow and on meeting minimum management requirements.

d. Benchmark WLD (Maximize deer effective acres)

This benchmark served to determine the maximum level of wildlife effective acres that could be achieved. It was determined that by maximizing deer effective acres all wildlife outputs could be optimized. The maximum potential was established, based on forage production and on optimum forage/cover ratios produced through the reduction of competing uses and optimum timber harvest levels.

e. Benchmark RGE (Maximize range outputs)

This benchmark was designed to determine the maximum production of domestic livestock grazing, considering only the minimum management requirements for the soil, air, water, and vegetation. It also helped determine a level of investment needed to achieve the maximum range output.

f. Benchmark RVD (Maximize recreation outputs)

Recreation designations were maximized to analyze the potential of the Forest to produce recreation visitor days (RVD's), considering the minimum management requirements for soil, air and water. However, this benchmark did not maximize all the recreational opportunities. It excluded a maximization of wildlife and fishing user days, although there is a certain level of these activities that did follow.

g. Benchmark WAL (Maximize wilderness acres)

Wilderness designation was maximized in order to determine the benefits, costs, outputs and opportunity costs of wilderness. Under this benchmark, an additional 259 M acres were excluded from a timber, oil and extensive resource program.

h. Benchmark MIN (Minimum level of management)

This benchmark defined the cost associated with public landownership and the resource outputs which are incidental to Forest management. It was used to compare inevitable costs and outputs of public ownership to those outputs induced through management direction and activities.

i. Benchmark CUF (Current future management)

This benchmark defined the current level of goods and services expected in the future if existing unit plan management direction is followed with no budget constraint (36 CFR 219.12a). It was modeled by assigning management prescriptions developed from current unit plans. It is also constrained the Forest timber harvest program as defined by the 10 year harvest management plan, and then controlled by sequential bounds of no greater than 20 percent above and 10 percent below the previous periods harvest.

j. Benchmark MIT (Present net value of market commodities)

This Benchmark explored the opportunity to maximize the present net values of only the Forest's market outputs. It defined "the mix of resources uses, combined with a schedule of outputs and costs, which will maximize the present net value of the major outputs that have an established market price" (CFR 219.12 (e)). This also explored sensitivity effects that nonmarket outputs have on the designation of land by comparing them to the present net value alternative.

k. Benchmark CUT (Current direction with budget constraint)

The purpose of this benchmark was to explore the level of resource outputs that could be obtained through quality management at present budget levels. The designation of land was limited to cur-

rent and minimum level emphasis prescriptions. Budget was limited to current levels.

l. Benchmark NWN (No additional wilderness)

This Benchmark was used to establish a point from which to compare the benefits or costs of additional wilderness. It also was used to compare the change in resource outputs that occurred when all areas that could be added to wilderness are added to the designation. This comparison can be made with the all wilderness benchmark.

m. Benchmark TAC (Timber Harvest at CMAI)

This Benchmark was used to test the effects of timber harvest at culminating mean annual increment (CMAI) and establishing a benchmark in which departures from CMAI can be measured. This is a required benchmark for insignificant timbered forests.

n. Benchmark TBC (Timber Harvest at 95% CMAI)

This Benchmark was to test the effects of timber harvest at 95 percent of culminating mean annual increment and the effects it would have on present net value. The benefits or costs of this constraint can be compared with other timber benchmark analysis.

o. Benchmark TSE (Timber Harvest within Sequential Bounds)

The purpose of this benchmark was to measure the economic tradeoffs of nondeclining flow and the related outputs. The timber in this benchmark was allowed to fluctuate 30 percent, that being that it could increase by 20 percent and decrease by 10 percent from the previous period (period + 5 years) timber harvest level.

D. Comparisons of Benchmarks

Analysis of the benchmarks established upper and lower potential production levels for selected resources. Additional analysis were done to estimate projected use levels and to establish monetary tradeoff reference points (Maximum PNV benchmarks). Table B-9 displays the constraints and opportunity cost of the benchmarks in addition to the relationships the benchmarks have to one another. Table B-10 displays selected outputs of the benchmarks, and Table B-11 shows the benchmark land designations, while Table B-12 lists economic effects by resource group. Table B-13 displays the discounted costs, discounted benefits, and present net value in order of increasing costs. The following summarizes some of the the major benchmark findings, additional discussions follow on resource relationships and production potentials.

1. Minimum Management Requirements

Tradeoff analysis for resources mitigation was done in the development of the management prescriptions. All prescriptions in the FORPLAN model met the minimum management requirements of soil, air and water. The maximum prescription, however, did not take into account the needs for other resources. The maximums are used to test the maximum potential the Forest has to produce output without regards to costs. These prescriptions were eliminated from the development of alternatives. Therefore, all alternative available prescriptions were multiple-use oriented. The tradeoffs of minimum management requirements could not be measured in the benchmark analysis because they were imbedded in all of the available prescriptions.

2. Nondeclining Yield

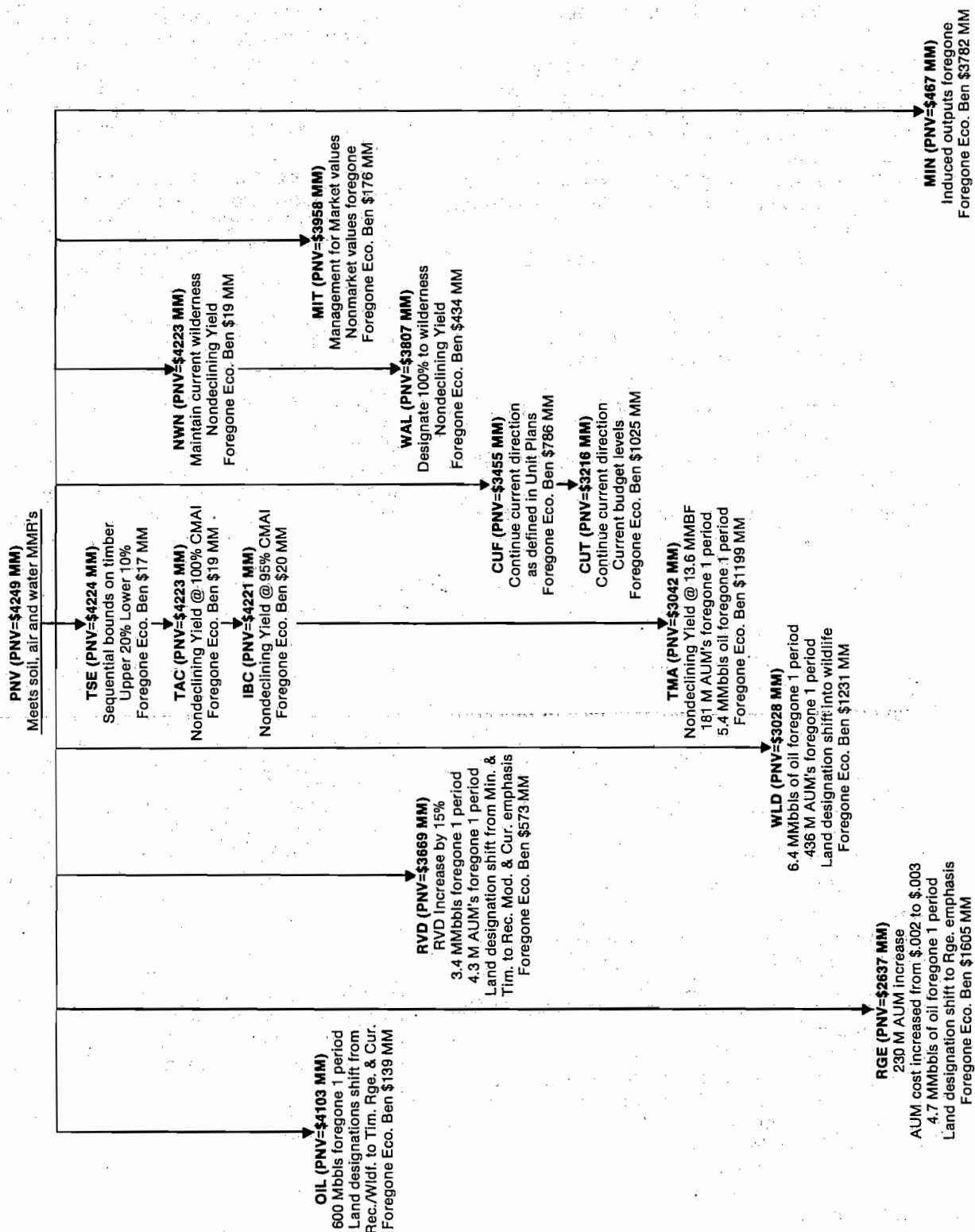
Nondeclining yield did not significantly effect present net value but does significantly increase the timber losses. Sequential bounds reduced the losses by \$6.3 MM in present net value. Compared to Maximum PNV, nondeclining yield reduced the present net value by \$10.6 MM. The actual benefits for timber went from an \$800 M to negative \$9.3 MM. This would indicate that the timber program on the Forest should be less than that harvested under the Benchmark TAC.

3. Roadless and Wilderness Management

The Absaroka-Beartooth Wilderness is considered wilderness in all benchmarks. The relationship between roadless/wilderness area management and present net value was defined by comparing benchmarks Maximum PNV, WAL and NWN. The difference between Maximum PNV and WAL and NWN was that the later two have nondeclining yield. (Benchmark NWN (nondeclining) is almost the same as Benchmark TAC with the exception of a few acres shifting in and out of moderate level to minerals emphasis.) The effects of wilderness management provided that all areas meet the standards is the difference between Benchmark WAL (all wilderness) and NWN. Benchmark WAL designated 659,525 acres to a wilderness and roadless emphasis, realizing that a portion of these areas have since their designation been impacted by some development. This designation increased the potential wilderness/roadless acres of the Forest by some 308 M acres, almost doubling the acres with this kind of emphasis.

The designation of wilderness/roadless reduced the present net value some \$415.8 MM. The main shifts in land designation was from moderate level (89 M acres). Some of the major reductions in present net value occurred in minerals (\$406 MM), recreation/wildlife (\$21 MM) and timber (reduced losses by 7.1 MM).

TABLE B-9
BENCHMARK FOREGONE ECONOMIC BENEFITS AND CONSTRAINT FLOW CHART



ANALYSIS PRIOR TO DEVELOPMENT OF ALTERNATIVES

TABLE B-10
RESOURCE OUTPUTS BY BENCHMARK

Output/Activity Units		BENCHMARKS														
		PNV	OIL	RGE	RVD	WLD	CUT	CUF	TMA	TAC	TBC	TSE	WAL	NWN	MIT	MIN
TIMBER		MMBF														
DECADE 1		0	27.8	43.3	43.2	4.0	5.7	6.5	13.6	7.8	8.9	8.3	4.0	7.8	0	0
DECADE 3		17.3	22.9	16.6	20.5	4.0	3.7	12.2	13.6	10.3	10.3	14.8	7.1	10.3	43.5	0
DECADE 5		15.9	4.2	4.9	2.8	2.5	2.4	8.4	13.6	10.3	10.3	9.7	7.1	10.3	5.3	0
DECADE 7		5.5	6.2	0.8	4.3	0.4	1.6	5.6	13.6	10.3	10.3	9.8	7.1	10.3	6.1	0
LONG RUN SUSTAINED YIELD		MMBF														
		9.2	19.6	17.5	19.2	9.4	4.2	13.0	19.4	14.7	14.7	14.8	10.1	14.7	13.0	0
LIVESTOCK FORAGE		MAUM'S														
DECADE 1		884	877	949	839	446	625	892	701	883	883	882	891	883	887	0
DECADE 3		880	877	1105	804	370	583	883	700	873	873	873	891	873	887	0
DECADE 5		899	893	1122	820	379	597	901	716	891	891	891	872	891	904	0
DECADE 7		898	894	1122	820	379	597	900	716	892	891	892	883	892	905	0
DEER INDEX		MACRES														
DECADE 1		1385	1385	1285	1455	1795	1450	1450	1485	1385	1385	1385	1400	1385	1340	1560
DECADE 3		1541	1500	1150	1610	2385	1625	1520	1605	1550	1545	1550	1550	1550	1465	1755
DECADE 5		1558	1510	1150	1600	2430	1635	1520	1620	1560	1555	1560	1565	1560	1475	1756
DECADE 7		1556	1510	1145	1605	2935	1635	1525	1620	1560	1560	1565	1565	1560	1480	1756
DEER POPULATIONS		MDEER														
DECADE 1		22.2	21.0	19.5	23.4	31.6	24.3	23.6	21.7	23.2	23.2	22.1	23.9	23.1	20.4	29.6
DECADE 3		23.0	21.1	17.0	24.5	37.8	24.6	23.6	21.8	23.9	24.0	23.0	24.5	23.9	20.3	31.9
DECADE 5		24.7	22.9	17.6	26.1	41.3	25.9	24.5	23.1	25.6	25.6	24.7	25.9	25.6	21.8	31.9
DECADE 7		24.8	23.0	17.7	26.4	43.0	26.0	24.6	23.2	25.7	25.7	24.8	26.0	25.8	22.0	31.9
ELK INDEX		MACRES														
DECADE 1		439	480	447	441	800	442	451	463	437	436	434	450	435	441	455
DECADE 3		447	500	445	450	985	421	431	463	444	443	444	445	444	446	445
DECADE 5		451	494	441	437	1010	420	429	465	443	442	443	444	443	446	443
DECADE 7		449	492	436	437	1015	421	428	462	441	443	440	443	441	444	443
ELK POPULATIONS		ELK														
DECADE 1		725	692	654	725	1466	998	894	712	814	813	743	943	809	712	1065
DECADE 3		701	687	648	699	1584	940	847	695	797	806	746	890	799	712	997
DECADE 5		705	701	652	737	1627	882	808	706	795	798	747	850	798	738	997
DECADE 7		705	701	652	735	1700	880	805	706	794	795	747	845	795	740	997
GROUSE INDEX		MACRES														
DECADE 1		200	195	164	210	255	205	200	205	200	200	200	200	199	192	216
DECADE 3		229	209	115	232	398	245	207	227	230	230	230	231	230	215	274
DECADE 5		230	210	115	232	401	245	207	227	231	231	231	232	231	216	274
DECADE 7		230	210	115	232	401	245	207	227	231	231	231	232	231	216	274
RECREATION PROJECTIONS		MRVD'S														
DECADE 1		842	754	614	949	642	696	880	667	833	835	844	672	833	709	675
DECADE 3		1264	1111	892	1476	935	989	1339	972	1264	1264	1259	1022	1264	1067	949
DECADE 5		1352	1178	945	1554	969	1051	1438	1033	1342	1342	1333	1089	1342	1120	1007
DECADE 7		1369	1201	968	1652	1010	1071	1480	1048	1382	1382	1366	1120	1382	1142	1023
OIL		MMBLS														
DECADE 1		17.6	17.0	12.9	14.2	11.2	13.5	13.3	12.2	17.6	17.6	17.6	16.3	17.6	17.6	8.4
DECADE 3		7.6	4.8	4.4	4.4	3.9	3.3	3.9	3.8	4.6	4.6	4.6	4.0	4.6	4.6	0.6
DECADE 5		0.7	1.0	1.3	1.3	1.2	0.8	1.1	1.1	0.8	0.8	0.8	0.4	0.8	0.8	0
DECADE 7		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING VISUAL CONDITION — DISTURBED		MACRES														
DECADE 1		359	402	435	280	312	365	253	310	361	362	361	293	363	402	122
DECADE 3		389	442	480	219	266	360	217	306	397	397	399	320	397	445	81
DECADE 5		398	451	482	208	255	356	206	308	408	406	410	327	409	461	15
DECADE 7		403	460	483	197	245	349	199	307	416	413	419	333	416	470	10
WILDLIFE & FISH USER DAYS PROJECTED		MWFUD'S														
DECADE 1		168	149	142	163	194	161	167	157	160	160	160	155	161	150	171
DECADE 3		288	244	207	295	411	246	294	268	282	282	282	271	282	248	271
DECADE 5		384	329	275	388	547	324	385	357	377	377	377	364	377	335	358
DECADE 7		449	392	328	462	659	388	456	429	449	448	449	434	449	396	429
ROADLESS ACRES		MACRES INVENTORIED														
		68.7	41.8	65.1	118	85.0	203	203	83.3	83.3	83.3	83.3	0	81.6	50.9	194
ADDITIONAL WILDERNESS		MACRES														
		0	9.8	81.4	65.1	48.4	9.8	9.8	0	0	0	0	259	0	9.8	64.9

TABLE B-10 (Continued)
RESOURCE OUTPUTS BY BENCHMARK

Output/Activity Units	BENCHMARKS														
	PNV	OIL	RGE	RVD	WLD	CUT	CUF	TMA	TAC	TBC	TSE	WAL	NWN	MIT	MIN
INCOME influence	Base year 1980 = 162 Values represent changes from 1980 base (\$162 MM) total income within zone of influence														
DECADE 1	178	172	136	136	55	96	106	85	173	174	173	147	173	167	-106
DECADE 2	59	56	55	33	-12	10	21	8	52	52	53	27	52	40	-122
EMPLOYMENT influence)	Base year 1980 = 4202 Values represent changes from 1980 base (4202 jobs within the zone of influence)														
DECADE 1	3747	3576	3855	3296	837	1636	2259	1762	3391	3417	3409	2733	3391	3087	-2071
DECADE 2	1980	1632	2450	1206	-160	215	1041	523	1498	1496	1519	841	1497	1008	-2115
FOREST WORK FORCE	Work year equivalents (Changes from base year 1980) 1980 = 224														
DECADE 1	58	206	1329	232	45	-36	99	259	88	93	85	65	88	65	-167
DECADE 2	58	152	1373	116	42	-49	102	206	90	87	89	67	90	58	-167
TOTAL COSTS	MM\$														
DECADE 1	6.9	10.6	39.1	11.2	6.5	4.4	7.8	11.9	7.6	7.7	7.5	7.0	7.6	7.0	1.4
DECADE 3	7.9	10.0	43.2	10.3	6.6	4.1	8.0	12.8	7.5	7.5	7.7	7.0	7.5	8.6	1.4
DECADE 5	8.4	8.9	43.9	8.7	6.6	4.1	8.0	12.6	7.7	7.7	7.7	7.1	7.7	7.1	1.4
DECADE 7	7.5	9.1	43.1	8.9	6.8	4.1	7.8	12.4	7.6	7.6	7.5	7.0	7.6	7.2	1.4
TOTAL DISCOUNTED BENEFITS (4%)	MM\$														
	4424	4340	3632	3907	3186	3317	3645	3335	4406	4405	4407	3976	4406	4134	500
TOTAL DISCOUNTED COST (4%)	MM\$														
	175	237	994	238	158	101	190	293	183	184	183	169	183	176	33
PRESENT NET VALUE (4%)	MM\$														
	4249	4103	2637	3669	3028	3216	3455	3042	4223	4221	4224	3807	4223	3958	467
BENEFIT/COST RATIO															
	25	18	4	16	20	33	19	11	24	24	24	24	24	24	15
FOREGONE ECONOMIC BENEFITS	MM\$														
	0	146	1576	580	1221	1033	794	1207	26	28	25	442	26	291	3782

TABLE B-11
LAND DESIGNATIONS BY MANAGEMENT EMPHASIS FOR BENCHMARKS
(Thousand Acres)

BMK	Range	Current	ModLvl	Minerals	Timber	Rec.	Wildlife	Wildner	MinLvl
PNV		225.395	137.022	1364.323	11.433	32.768	258.631	341.737	79.318
OIL	107.805	325.485	127.270	1367.706	66.551	2.732	92.653	351.422	8.941
RGE	1311.104	477.975	9.457	42.230	92.637	12.051	22.636	455.714	26.761
RVD	97.865	417.100	845.294	61.624	24.563	139.928	414.103	403.026	47.062
WLD					.213		1885.126	390.996	174.230
CUT		1082.087			3.438			341.622	1023.417
CUF		1936.147						342.634	171.783
TMA	270.907	657.032	247.304	48.664	146.348	.359	308.091	516.241	255.619
TAC	.858	200.843	144.825	1347.878	60.820	37.806	236.675	341.737	79.124
TBC	5.236	202.051	159.445	1322.434	64.970	37.988	236.675	341.737	80.029
TSE		199.932	159.445	1337.475	55.945	36.151	240.529	341.737	79.351
WAL		197.252	70.040	1207.265	39.350	4.945	187.291	659.525	74.266
NWN	.858	200.843	159.445	1333.258	60.820	37.806	236.675	341.737	79.124
MIT	32.136	139.840	203.980	1576.123	43.854	.680	6.196	351.422	94.521
MIN								414.387	2036.240

TABLE B-12
PRESENT VALUE BENEFITS AND COSTS BY RESOURCE GROUP BY BENCHMARK
(MILLIONS OF DOLLARS)

BMK	Livestock		Oil		Recreation & Wildlife		Timber		Other*		Combined Total
	PVB	PVC	PVB	PVC	PVB	PVC	PVB	PVC	PVB	PVC	PNV
PNV	271.3	49.2	3857.2	6.5	287.1	22.0	8.2	10.3	0	86.7	4249.1
OIL	268.8	73.3	3831.0	6.2	247.1	22.2	13.6	51.2	0	104.7	4103.3
RGE	320.1	829.5	3116.1	4.5	210.4	18.8	10.1	61.7	0	104.7	2687.6
RVD	250.8	62.1	3363.2	5.1	306.8	32.5	8.6	57.4	0	103.5	3668.8
WLD	122.1	22.4	2733.1	4.1	331.2	25.7	3.0	9.1	0	100.0	3028.2
CUT	182.6	26.8	2889.0	2.9	243.1	5.3	4.4	6.0	0	62.2	3216.0
CUF	272.4	48.2	3077.1	5.0	294.4	25.1	8.7	18.8	0	100.1	3455.0
TMA	215.6	144.9	2868.2	4.3	254.1	20.7	10.2	36.6	0	99.6	3042.1
TAC	269.6	47.9	3851.1	6.4	282.4	21.9	9.7	18.9	0	94.9	4222.7
TBC	269.6	48.3	3850.9	6.4	282.3	21.9	9.7	19.8	0	94.9	4221.3
TSE	269.6	47.8	3851.3	6.4	282.1	21.8	11.4	19.4	0	94.9	4224.1
WAL	269.5	47.4	3443.9	5.9	258.3	18.8	7.6	9.7	0	91.4	3807.0
NWN	269.6	47.9	3851.1	6.4	282.4	21.9	9.7	18.9	0	94.9	4222.8
MIT	272.6	48.1	3850.6	6.5	0	17.4	16.7	15.8	0	94.3	3957.9
MIN	0	0	244.0	.1	255.3	0.4	0	0	0	32.5	467.0

*The "Other" category contains costs that could not be split out and allocated to a specific resource. The presence of such "joint" costs makes direct comparisons of individual resource benefits and costs misleading.

TABLE B-13
DISCOUNTED COSTS, BENEFITS AND PRESENT NET
VALUE BY BENCHMARK (4%)
MM \$'s

Benchmark	COSTS		BENEFITS		PNV	
	MM\$	Change	MM\$	Change	MM\$	Change
MIN	33	70	500	2819	467	2749
CUT	103	58	3319	-130	3216	-188
WLD	161	11	3189	790	3028	779
WAL	172	3	3979	445	3807	442
PNV	175	8	4424	-284	4249	-291
MIT	182	8	4140	273	3958	265
TAC	190	0	4413	1	4223	1
TSE	190	0	4414	-1	4224	-1
NWN	190	1	4413	-1	4223	-2
TBC	191	7	4412	-760	4221	-766
CUF	198	60	3652	709	3455	648
OIL	258	3	4361	-432	4103	-434
RVD	261	45	3929	-581	3669	-627
TMA	306	713	3348	309	3042	-405
RGE	1019		3657		2637	

4. Livestock Forage Production

There are approximately 1.6MM acres of suitable range on the Custer National Forest. About 834 M of acres are currently not being grazed and are presently considered unavailable or unsuitable. These relationships remained constant through all benchmarks. Therefore the ability to produce AUMs was dependent upon just over 1.612 MM acres. The various levels of AUMs production depended on the intensity of management.

The capacity of suitable rangeland to support livestock exceeded current levels. In the final analysis, the opportunity to provide for the grazing of domestic livestock depends on range forage production that results from intensive range management practices, timber management practices, and/or the degree to which available resources are committed to livestock production.

The Analysis of the Management Situation benchmarks established upper and lower livestock production levels. For 1983, actual use is 799,345 animal units months (AUM's.) of grazing, and actual permitted use is 865,458 AUM's. The Benchmark MIN was constrained to zero AUM's in order to access the base level of operation for the Forest.

The maximum range production occurred in Benchmark RGE in which range intensity was at the highest. Considerable site conversions, fertilizing and other capital investments were considered in order to produce range forage. Other resources were left in abeyance as range production was the prime objective. This benchmark produced about 949 M aums in the first decade and leveled out at about 1.122 MM in the fifth decade. This was an increase of 28 percent over current permitted AUM's and compared to Benchmark CUF was about a 25 percent increase. Benchmark RGE was the only benchmark where the range cost exceeded the benefits, reflecting the level of investment needed to make small increases of AUM's. This benchmark when compared to PNV, had one of the highest foregone economic benefits and the lowest benefit cost ratio. The present net value for the range program was a negative \$509.4 MM over the 75 year planning horizon. This benchmark had 1.311 MM acres designated to a range emphasis, where Maximum PNV had zero acres designated to a range emphasis.

5. Current Direction

The economic tradeoffs of current direction with no budget constraint was analyzed by comparing Benchmark CUF and Maximum PNV. The foregone economic benefits of implementing Benchmark CUF was \$778 MM. The major part of

this cost occurred in the development of oil, where the present net value was reduced by \$774 MM. Timber value changed from a plus \$8.2 MM in PNV to a \$-10.0 MM under CUR. The differences in the constraints for timber were a nondeclining yield and the District floors. Recreation/wildlife and range values increased from PNV. The overall present value benefits dropped from PNV by \$767.6 MM, while cost increased \$10.7 MM. The majority of the cost increases were in timber and recreation/wildlife programs. Land designation change, from 199 M acres in current under PNV to 1.936 M acres of current under CUF. Current direction reflected the direction of existing approved Unit Plans.

6. Elk Populations

Elk have a limited distribution on the Forest, with the vast majority occurring on the Beartooth District. While some elk occur in North Dakota, the capacities represented here respond to activities that occur on the Beartooth District. Presently it is estimated that there is a capacity for 1000 elk on an average-year basis. Under a maximum wildlife benchmark (WLD), the capacity increased to 1700 when management activities were designed to produce elk habitat. Under most alternatives the elk capacity declined to approximately 700, due to commodity production activities on the home range for elk and limitations on the protection of the winter ranges. Under the maximum range benchmark (RGE) the capacity declined to approximately 650 elk, as a response to intensive livestock grazing on some of the winter ranges. Under the minimum level benchmark (MIN), the capacity increased to approximately 1065 as competing uses were removed.

7. Deer Provided Capacity (PC)

Deer provided capacity is currently estimated at 27,000 deer. The maximum deer benchmark (WLD) indicates that 43,000 deer could be produced on the Forest under intensive management. Under Range maximum benchmark (RGE) the PC for deer declined to 17,000 deer, principally as a result of competition in the woody draws and riparian zones. Under the market commodity benchmarks such as maximum timber (TMA) and maximum oil (OIL) and Maximum PNV, the PC declined to approximately 21,000 deer. The PC did not decline more than this because these benchmark were driven by a single resource, and as such had maximum affect on most of the ecosystems. The diverse use of habitats by deer provides them with habitats that are not affected by any one resource. In short, they are adaptive and with the exception of the riparian/woody draw zone, can survive a fairly large disturbance. Under the minimum level benchmark (MIN) the PC increased to 32,000 deer as a result of removal of conflicting uses in the principal deer habitats.

8. Fisheries

The number of fish produced does not vary much under any of the benchmarks. This is because the large majority of fish produced on the Forest are produced within the boundaries of the Absaroka-Beartooth Wilderness (approximately 42,000 fish), and this wilderness is not opened to non-wilderness uses under any of the benchmarks. There are some streams and ponds that occur outside of the wilderness and these were evaluated under the goals and objectives of each benchmark. Under a maximum wildlife benchmark (WLD) the provided capacity for fish was estimated to be approximately 45,000 fish, and under the range maximum benchmark (RGE) this declined to approximately 43,000 fish.

9. Timber

The land base of about 157 M acres is classed as tentatively suitable for timber production. This land base was common to all benchmarks and had the capacity to produce 13.6 MMBF on a nondeclining yield basis. This was determined through the maximum timber benchmark (TMA). The minimum Benchmark MIN was constrained to a zero harvest level. The maximum harvest in any given period occurred under Benchmark RVD which cut an average of 84.2 MMBF for the first period (five years). This would indicate that areas needed to be opened up to produce opportunity to increase recreation. For the timber decision space, the Benchmark TMA defined the upper limits of 13.6 MMBF and benchmark MIN the lower limits of zero. The Benchmark Maximum PNV did not harvest any timber until the fourth period, at which time it took 790 MBF. The Benchmark TMA designated 146 M acres to a timber emphasis, while Benchmark Maximum PNV designated 11 M acres. Benchmark TMA present value for timber was \$10.2 M over the planning horizon, while Benchmark Maximum PNV was \$8.2 M over the same period.

Three other timber benchmarks were developed to analyze the effects of culminating mean annual increment and sequential bounds. Benchmark TAC established the basis for comparison of changes from CMAI. This benchmark projected a harvest of 7.8 MMBF in the first decade and leveled out at a nondeclining yield of 10.3 MMBF. This was 3.3 MMBF below Benchmark TMA, and also designated 85.5 M acres less to a timber intensity. The change in the present value of timber was a decrease of \$0.5 MM dollars. The discounted cost decreased by \$17.7 MM.

Benchmark TBC increased harvest the first decade over TAC by 1.1 MMBF and then leveled out at the same nondeclining yield of 10.3 MMBF. This analysis had no effect on the present value of timber, but increased the cost by \$.2 MM. Land designation for timber increased by 4 M acres over Benchmark TAC. The overall effect on the

present net value of the Forest was insignificant, with only a million dollars difference in foregone benefits between TAC and TBC.

Benchmark TSE started out as a harvest level of 8.3 MMBF and peaked in the third decade at 14.8 MMBF, then dropped to about 9.8 MMBF. The harvest in the third decade exceeded all timber benchmarks, but the ending harvests were all lower. This benchmark designated 55.9 M acres to a timber emphasis, which was less acres than for any of the timber benchmarks. The present value was the best under this benchmark than all the timber benchmark, and had a foregone benefits valued at \$25 MM compared to Benchmark Maximum PNV.

10. Recreation

The Custer National Forest has an opportunity to increase its recreational opportunities. The 1983 level of developed and dispersed recreation use was 798 M RVD. Current projection under Benchmark CUF indicated a level of 1.4 MM RVDs. The maximum recreation Benchmark RVD exceeded the projected amount by some 200 M RVDs, while Benchmark Maximum PNV was about 100 M less than projected. The discounted costs and present value exceeded Maximum PNV by \$10.5 MM and \$19.7 MM respectively. Land designation under RVD to recreation was almost 140 M acres while Maximum PNV designated just over 32 M acres.

11. Oil

Mineral development and the resulting products control a great deal of the land designation in the FORPLAN model. Oil production is the largest contributor to present net value. Benchmark OIL maximized the forecasted production of oil, producing 350.9 MM bbls of oil over the planning horizon. This was only 400 M bbls above Benchmark Maximum PNV. This benchmark designated 3 M acres more to a mineral emphasis than Maximum PNV. The discounted cost for the mineral program was \$18.3 M higher than Maximum PNV and the benefits were about \$26.2 MM below. The difference is explained in the discounting of the cost and benefits over the planning period.

12. Present Net Value

The Benchmark Maximum PNV produced the maximum present net value of the Forest at \$4249 MM. There was no constraint on this benchmark other than minimum management requirements for soil, air and water. Timber harvest was not constrained. Therefore, there was no timber harvest in the first 15 years. However, in the half of the second decade timber harvest was initiated at 790 MBF annually. Land designation was predominantly to a mineral emphasis over 56 percent.

13. Discounted Cost

Benchmark MIN produced the minimum dis-

counted cost of \$33 MM. This cost reflects strictly a custodial level of management with no management induced outputs. Benchmark RGE had the highest discounted costs of any of the benchmarks. It was \$994 MM. The next closest benchmark was over \$756 MM less. The high costs was attributed to a very extensive range improvement program.

14. Employment

Outputs from the Forest in 1980 produced 4202 jobs, based on the Forest IMPLAN model (I/O model). Values at the end of the first decade indicated that the maximum range benchmark (Benchmark RGE) would produce an additional 3855 jobs. The minimum level (Benchmark MIN) would reduce the 1980 level by -2071 jobs in the first decade. Current management with budget restrictions would produce an additional 1636 job in the first decade, while the current future would produce 2259 jobs in the same decade. Maximum PNV produced 3747 job in the first decade above the 1980 level.

15. Sensitivity to Non Market Values

The sensitivity of land designation and output schedules to assigned values of nonmarket resources was determined by comparing Benchmarks Maximum PNV and MIT. The only difference between these benchmarks was the value of recreation. Dispersed, wilderness, and wildlife recreation were assigned monetary values in Benchmark Maximum PNV, but no monetary value in Benchmark MIT.

Land designation on the Custer National Forest is sensitive to nonmarket valued resources. Benchmark Maximum PNV had 259 M acres to wildlife and 33 M acres to recreation emphasis, while Benchmark MIT designated only 6 M acres to wildlife and 700 M acres to recreation. In Benchmark MIT, AUMs increased slightly while oil and timber stayed about the same. Recreation and wildlife use decreased under MIT. Present net value for market resources increased for AUMs and timber by \$3 MM and \$.1 MM respectively. The foregone economic benefits for Benchmark MIT was \$291 MM, which was mostly the value of recreation/wildlife uses. Recreation and wildlife values in Benchmark Maximum PNV was about \$287 MM.

E. Resources Relationships

1. Wilderness and Roadless Designation/ Timber

The land base of the Custer NF for timber is about 7 percent of the total area, while the potential of wilderness is 27 percent of the total land base. This level of wilderness designation would reduce the timber base by about 30 percent, or from 157 M acres to 110 M acres. The effects of wilderness designation can be seen by comparing Bench-

marks TAC and NWN to Benchmark WAL. The increase of wilderness to the maximum level reduced the nondeclining yield by 3.8 MMBF in the first decade and lowered the nondeclining yield overall by 3.2 MMBF in following decades. Wilderness designation increased the present value benefits by \$1.6 MM and reduced the present net value by \$7.1 MM. On the other hand, recreation/wildlife values decreased when wilderness acres increased.

2. Timber/Range

In some areas livestock forage can be increased through timber harvest. When comparing Benchmark TMA with RGE we see that a departure from nondeclining yield allowed a timber harvest in excess of 43 MMBF in the first decade to bring on additional AUMs. The comparison between Benchmarks Maximum PNV and MIT indicates that economically timber harvest would be put off rather than harvested to bring on additional AUMs. In general, timber harvest on the Forest would not significantly increase the total number of AUMs. Locally it could have some benefits.

3. Timber/Wildlife

Timber harvest plays an important role in wildlife populations of the Custer National Forest. The optimum level of timber harvest in relationship to wildlife was defined by Benchmark WLD at around 4 MMBF. This is a reduction from Benchmark TMA by 9.6 MMBF. A comparison of Benchmark WLD, TMA and MIN indicated that timber harvest will increase elk provided capacity to a point, and then decrease. Too much harvest has somewhat the same effect as no harvest when comparing these three benchmarks. Elk need a certain amount of thermal cover in relationship to foraging areas. Deer on the Beartooth and Ashland Districts will respond to timber harvest. These Districts have been classed as generally forage-limiting, and openings would increase forage species, while the remaining District has been classed as cover limiting and additional harvest would further reduce population numbers.

4. Range/Wildlife

Livestock use and wildlife provided capacity are inversely related. By examining RGE and WLD, we see this relationship, for as AUMs increased in RGE all wildlife outputs decreased conversely, as wildlife values in WLD increased AUM's decreased. The optimum combination between these resources as they relate to other resources is indicated in Benchmark Maximum PNV.

5. Wilderness and Roadless Designation/Range

Relationship of range and wilderness/roadless designation can be examined by comparing Benchmark WAL and NWN. The inclusion of all

areas into wilderness reduced AUM's by about 8 M AUM's, or less than one percent by the end of the seventh decade. Livestock grazing would continue on these areas, but the intensity of management would change.

6. Wilderness and Roadless/Minerals

Wilderness and roadless designation removed areas from surface mineral development. The effect of this reduced the total barrels of oil production over the 75-year planning horizon by 40.3 MM. This reduced the present net value of oil production by \$406 MM.

7. Wilderness and Roadless/Wildlife

Designation of land to wilderness can have some positive effects on wildlife population through the control of access. However, it may limit an area from reaching full potential due to limitations placed on habitat improvement. In comparison of Benchmark WAL with NWN, there were no significant differences in provided capacities for wildlife. One advantage of wilderness designation is that timber harvest decreases and therefore is closer to the optimal thermal cover ratio level for wildlife.

8. Minerals/Range

Mineral development affects the range in an adverse direction. In development of yield tables, based on data, the impact of oil and gas development affects sufficient land to cause about a 5 percent decrease in AUMs. The loss was regained through more intensive management systems and through rehabilitation of developed sites and rights-of-ways.

9. Minerals/Timber

Mineral development has no major effect on timber production, but through mineral development, areas not economically suitable for timber harvest become accessible and economically acceptable. Because of the early planned development of oil and gas, most timber harvest is accessed through mineral developed roads.

10. Minerals/Wildlife

Minerals development has an adverse effect on wildlife in that it provides access, and ease of access is generally in the bottom lands which are key areas for wildlife species. Advance planning helps to mitigate some of the impacts by controlling roads and other development throughout key areas.

F. Production Potential

The benchmarks provide information about production and economic potential of the Forest. This section discusses the potential and efficient mix of resource outputs to meet the potential.

1. Potential Under Current Management (Benchmark CUF)

Continuing current management direction as outlined in the Unit Plan direction with appropriate funding would provide a good mix of goods and services. Some outputs such as oil would be limited to a level of 284.8 MM barrels of oil over the planning horizon. This is some 66 MM barrels below Benchmark Maximum PNV. Timber harvest would be a departure with 6.5 MMBF in the first decade, 12.2 in the third and under 6 in the seventh decade. Range outputs start off at 892 M AUM's in the first decade slightly above current, and level off around 900 M AUM's, an increase of about 3 percent. This is a little higher in the first few decades than Maximum PNV but ends up about 10 M AUM's less in the seventh decade.

Recreational outputs exceed PNV in excess of 6 percent and climb to 9 percent in the seventh decade. Wildlife and fish recreation stay about the same. When compared to Benchmark Maximum PNV, the Forest has an opportunity to reduce its discounted cost by \$15 MM and increase its present net value by \$794 MM. The benefit cost ratio of CUF is 19:1 compared to a 25:1 under Maximum PNV.

2. Market and non-Market Potential (Benchmark Maximum PNV)

The maximum present net value of the Forest meeting only minimum management requirements of soil, air and water was \$4242 MM. Timber management emphasis occurred on 7 percent of the tentative suitable lands. Present net value was optimized by delaying timber harvest until discounted timber prices and cost had a reduced effect on the total present net value. Timber harvest was zero for the one and a half first two decades. The long run sustained yield was 7.4 MMBF. There were no acres designated to a range emphasis, but range output was maintained at current levels in the first few decades and exceeded current levels toward the end of the planning horizon. Mineral emphasis designation was 1.364 MM acres, producing 351 MM barrels of oil, just under the maximum oil benchmark (OIL). There were 33 M acres designated to a recreation emphasis. This produced 842 M RVDs in the first decade and by the seventh decade it was producing 1369 M RVD's.

Wildlife emphasis designation exceeded 259 M acres. This plus the other designation produced provided capacities for elk at 440 M acres, deer at 1750 M acres and grouse at 274 M acres. These values all exceeded current. Wilderness designation was about 14 percent of the land base. Current direction was maintained at 8 percent. Over 6 percent was designated to a moderate level of management and 3 percent to a minimum level of management.

3. Market Potential (Benchmark MIT)

The maximum present net value of the Forest

when timber, range and minerals were assigned a monetary value was \$3958 MM. Timber management emphasis occurred on about 2 percent of the land base and about 28 percent of the total timber tentative suitable lands. Present net value of timber was optimized by delaying timber harvest until the discounted timber prices and cost had a reduced effect on the total present net value. Timber harvest was similar to PNV, with just a little higher volume per decade. There were 32 M acres designated to a range emphasis, which increased the AUM's in the first decade over Maximum PNV by 3 M AUM's. In the seventh decade, AUM's were almost 7 M more than Maximum PNV. Mineral emphasis was designated to 1.6 MM acres, or about 64 percent of the Forest, and produced 348 MM barrels of oil over the planning horizon. This was about 2 million less than Maximum PNV. The remaining land base was designated according to the following emphasis: Current 6 percent, Moderate level 8 percent, recreation less than 1 percent, wildlife less than 1 percent, wilderness 14 percent, and minimum level 4 percent. It can be determined that market emphasis would greatly influence land designation on 316 M acres or 13 percent of the Custer National Forest.

4. Fixed Costs of Ownership (Benchmark MIN)

The minimum annual budget for the Forest would be about \$1.4 M throughout the planning horizon as determined by Benchmark MIN. This level of management would be strictly a custodial level of management. This would form the base from which management induced output cost could be calculated. All lands were designated to a minimum intensity of management. The only direct resource cost would be in protecting capital investment and resources as the need arose. The present net value of this level of management was 467 MM dollars. This would give a benefit cost ratio of about 8:1. The foregone benefits were \$3782 MM.

5. Timber Potential (Benchmark TMA)

The maximum first decade harvest under nondeclining yield was 13.6 MMBF. This level of harvest was then sustained over the 75 year planning horizon. This involved timber emphasis on 93 percent of the tentative suitable timber lands. The remaining suitable lands were designated as follows: 5 percent to a Range emphasis, in which timber harvest occurred, and less than 2 percent to minimum, minerals and wildlife emphasis.

Benchmark OIL which departed from nondeclining sustained yield produced the largest long run sustained yield at 13.7 MMBF. This benchmark only designated 43 percent of the tentative suitable land to timber emphasis. However, the first few decades produced volumes in excess of 20 MMBF.

6. Range Potential (Benchmark RGE)

The maximum animal unit months that the Forest can produce were demonstrated by this benchmark. It produced an average annual of 949 M AUMs in the first decade and leveled off at 1122 M by the fifth decade. This benchmark designated 80 percent of the suitable range land to a high level of range management, with site conversion, fertilizing and other types of capital improvements that would increase carrying capacities. The remaining 20 percent was mostly designated to a current level of management that was already at a high intensity of management. This level of output had a high investment level of \$830 MM total discounted cost and produced a present net value for AUMs of \$320 MM.

7. Mineral Potential (Benchmark OIL)

The Forest has considerable potential in leasable, locatable and common variety minerals. This benchmark maximized oil production. The cumulative total primary production of oil was estimated at 350.9 MM barrels of oil. This exceeded Maximum PNV by some 400 M barrels. There was 56 percent of the land base designated to a mineral emphasis.

8. Wildlife Potential (Benchmark WLD)

The diversity of the Forest lends itself to many aspects of wildlife development. Three different outputs were tracked in the model (deer, elk and grouse) for wildlife. This benchmark designated 1885 M acres or 77 percent of the Forest to a wildlife emphasis. This provided a habitat suitability index of 1795 M acres in the first decade for deer, which equates to a provided capacity of 31.6 M deer. By the seventh decade the suitability index is 2935 M acres. Elk habitat suitability was 800 M acres the first decade and leveled off at 1010 M acres by the fifth decade. This equates to 1466 and 1700 elk respectively. Grouse suitability index started and leveled out at 401 M acres in the fifth decade.

9. Wilderness Potential (Benchmark WAL)

Currently the Forest has 351 M acres of wilderness in the Absaroka-Beartooth Wilderness, representing about 14 percent of the net land base. The potential exists to almost double the wilderness acres, or at least to increase the level to about 27 percent of the net acres of the Forest. A good share of these additional acres have been leased for oil and gas development (Appendix C).

VII. Formulation of Alternatives

A. Overview

A Forest plan alternative is a mix of management prescriptions applied in specific amounts and locations to achieve a desired management goal and objectives. According to NFMA (36 CFR 219.12(f)) alternatives must:

- Be within the maximum and minimum resource potential of the Forest to provide a full range of resource outputs and expenditure levels.
- Be formulated to facilitate analysis of opportunity costs, resource use, and environmental tradeoffs among alternatives.
- Be formulated to facilitate evaluation of present net value, benefits, and costs of achieving various outputs and nonpriced benefits.
- Address and respond differently to major public issues, management concerns, and resource opportunities.
- Represent the most cost-efficient combination of management prescriptions to meet the objectives of the alternative.
- State the condition and uses that will result from long-term implementation.
- State what goods and services will be produced, including timing and flow of outputs, and the costs and benefits generated.
- State the resource management standards and guidelines.
- State the purposes of the proposed management direction.

Formulation of alternatives, planning step five followed the analysis of the management situation. Benchmarks from this analysis defined the range within which alternatives are developed. In addition, several alternatives are required: one which responds to the RPA program assignments, and another which reflects current and future level of goods and services if current management is continued (the no-action alternative); one which displayed a high level of market commodities and some which analyzed different levels of wilderness. The process of alternative development can best be explained in a series of steps.

Step 1. Major public issues are identified through public involvement. Internal management concerns are added to the list of issues (Appendix A). These issues and concerns are reviewed by the management team and consolidated into a set of planning questions to be answered.

Step 2. Land analysis areas with similar physical and biological attributes are identified and mapped (Appendix B Section I). The capability, suitability and management opportunities of specific areas of the Forest are considered in this step.

Step 3. A set of management prescriptions are prepared to represent a variety of possible ways and intensities to manage the Forest (Appendix B Section III.D).

Step 4. The 347 analysis areas identified in Step 2 are then assigned management prescriptions. Some analysis areas are assigned a minimum of three prescriptions while others are assigned a variety of prescriptions that could be applied to a given analysis area.

Step 5. Resource outputs and associated costs and dollar values that would result when a prescription is implemented are calculated. This activity resulted in the resource yield tables and economic tables used in the computer model FORPLAN.

Step 6. Demand is estimated for the resources involved in the planning questions.

Step 7. Supply potentials are determined using the FORPLAN computer model. Various assumptions, constraints and objectives are used to establish benchmarks for supply potentials of several resources. Benchmarks are established for the minimum, maximum and constraint resources levels and maximum present net value. Existing resource supply and projected demand are compared to supply potentials of the benchmarks. Opportunities to resolve issues and management concerns are identified for each resource by comparing existing and projected demand to production levels. These potentials, when compared to the Current Direction, indicate opportunities and/or need to change. This step concluded the analysis of the management situation.

Step 8. Alternative objectives are established to provide a broad range of options for future management of the Forest. Descriptions are written to define the resource management intent for each alternative.

Step 9. The FORPLAN model is again used to estimate the outputs and costs for each alternative by reflecting the objective of the alternative through a given set of constraints. This step is repeated as necessary to assure the constraints are properly reflecting the objective of the alternative.

Step 10. The results of the FORPLAN analysis for each alternative are evaluated to assure conformity with laws, policies and guidelines. Refinements are made to insure that each alternative could be achieved.

The interdisciplinary team incorporated cost efficiency into the planning process. First a comparative analysis is performed to identify the most cost efficient prescriptions. For the timber resource an additional analysis is done to identify the most cost efficient level of management intensity and best timing choices for stand entry on each timber prescription. Second, the interdisciplinary team developed different alternatives and identified the constraints to address specific objectives, issues and concerns. Third, prescriptions meeting the

cost efficiency test are combined with the necessary constraints and incorporated into FORPLAN to form different alternatives. Each alternative produced a different combination of priced and nonpriced outputs. The feasibility of each alternative is analyzed with FORPLAN.

During the analysis of the management situation, resource supply potentials are determined by establishing minimum and maximum production levels called benchmarks (Appendix B Section VI). A point of reference is also defined from which the costs and effects of applying regulations and policy constraints are measured. Production capabilities are determined for single resources as well as for a set of multiple resources outputs that maximize present net value. This analysis established the benchmark levels required by national planning direction. The benchmarks serve as a reference from which the costs and effects of various objectives and constraints used in developing alternatives are evaluated.

Selected benchmarks are used to define upper and lower limits for the production of each resource. These upper and lower limits outlined the decision space boundaries for the resources involved. The interdisciplinary team considered demand, supply, potential (upper and lower limits), and evaluated public input to establish the range of alternatives within the decision space.

The benchmark analysis is done using the FORPLAN model. Production potentials and costs are derived by giving specific objectives to the model such as maximize the livestock forage output. Variations are made within a specific objective by applying a single or series of constraints designed to accomplish a second objective. For example, using the primary objective of maximizing present net value, a constraint may be to limit the amount of timber cut on a District to protect wildlife cover that may be limiting for that District.

B. Common Constraints

The constraints applied to all alternatives resulted from NFMA regulations (36 CFR 219), Administration policy (Peterson, 1983 May 13) and suitability criteria. Tradeoffs are discussed in relationship to Maximum PNV Benchmark.

1. *Constraint:* Ensure that an appropriate level of timber inventory at the end of the planning horizon is common to all except Alternative 2.

Purpose: To provide a harvestable timber stand to be available in the period (5 Years) immediately following the end of the planning horizon.

Rationale: Assume a future sustained yield of timber harvest.

Tradeoff: Ending inventory had no noticeable affect on the present net value.

2. *Constraint:* Provide for a sustained timber harvest by District.

Purpose: To provide a timber harvest at a level by District that would sustain local mills on three Districts.

Rationale: Maintain community stability and local dependent mills.

Tradeoff: Contributed to timber harvest in the first four period (20 year) which negatively affect the total present net value.

3. *Constraint:* Provide for a sustained yield of animal unit months (AUMs) by District.

Purpose: To maintain a range program by District that would sustain local communities and local ranchers demands.

Rationale: Maintain local community stability and livestock industry.

Tradeoff: Changes in livestock number by District affect the present net value.

4. *Constraint:* All alternatives have the same objective function that is to maximize the present net value.

Purpose: To display the maximum present net value of a given set of constraints and provide for a basis on which to compare alternatives.

Rationale: The process provides a common base in which all alternatives can be compared by meeting the maximum present net value on each an every acre that is not constrained.

Tradeoff: None.

5. *Constraint:* Maximum yield prescriptions are eliminated from all alternatives.

Purpose: To achieve a multiple use concept on land designations and meet minimum management requirements.

Rationale: Maximum resource prescriptions are single resource oriented and did not meet minimum management requirements of other resources.

Tradeoff: Reduction in potential yields of a given resource.

6. *Constraint:* Minimum rotation ages set at the age where 95 percent of culminating mean annual increment (CMAI) of the timber growth has occurred.

Purpose: To assure that timber is harvested at or beyond its maximum mean annual growth rate.

Rationale: Provide rotation ages that maintain high productivity and produce maximum volume of commercial timber.

Tradeoff: Restrict rotation age length to 100 percent of (CMAI) to potentially increase volumes and reduce impact on the present net value. However, the reduction is insignificant.

7. *Constraint:* Timber harvest is precluded from existing wilderness.

Purpose: Implement legislation.

Rationale: Wilderness legislation precludes timber harvest.

Tradeoff: The economic effect of precluding timber harvest from wilderness.

8. *Constraint:* Suitable acres of range land is constraint to all suitable acres through all alternatives.

Purpose: To maintain existing acres of range lands now under management.

Rationale: All acres of suitable rangeland can be available regardless of designation. Management intensity may change, but still the acres will be the same.

Tradeoff: None.

9. *Constraint:* Upper limits of tentatively suitable timber lands common to all alternatives.

Purpose: To allow access to all tentatively suitable timber lands.

Rationale: All tentatively suitable lands have potential to produce timber, therefore the model is used to select when and where to harvest timber to meet a given set of constraints.

Tradeoff: None.

C. Development of Alternatives

This section displays for each of the 17 alternatives the criteria and assumptions underlying the alternative, and displays the constraints utilized to meet those criteria and assumptions.

1. Alternative 1

The purpose of this Alternative is to optimize the wildlife and increase wilderness and roadless area values to the extent possible.

a. Criteria and Assumptions

1) Optimize the wildlife potential of the Forest.

2) Optimize the Wilderness and roadless areas to the extend possible without taking away from the wildlife values.

3) Other resources values would be submissive to wildlife, wilderness and roadless designations.

4) Bottoms and riparian zones would be protected to enhance wildlife values.

5) All mitigation measures would be as far as possible in favor of wildlife.

b. Constraints

1) *Constraint:* Roadless and wilderness acres are controlled through emphasis and intensities. The first FORPLAN iteration was to maximize deer.

Purpose: To ascertain the optimal level of wildlife affected acres possible given the wilderness and roadless constraints and to use these values as a constraint in a subsequent FORPLAN analysis.

Rationale: To obtain the optimal level of wildlife effective acres possible.

Tradeoff: Nothing was assessed.

2) *Constraint:* Wildlife (deer) effective acres obtained from the first iteration started at 1635 M acres and increased to 2125 per period.

Purpose: To achieve the goal of the alternative of a high level of wildlife and optimal level of wilderness and roadless acres.

Rationale: To optimize wildlife values.

Tradeoff: Reduction of market values, primarily oil and range. Timber was harvested to meet wildlife needs.

3) *Constraint:* Sequential bounds of 20 percent (upper) and 10 percent (lower) of the previous period.

Purpose: To allow flexibility in the timber harvest.

Rationale: To allow timber harvest to fluctuate as needed to produce wildlife values.

Tradeoff: Departure from nondeclining yield reduced impact on present net value.

2. Alternative 2 (RPA)

The purpose of this alternative is to determine how the Forest can best implement the 1980 Forest and Rangeland Renewable Resource Planning Act (RPA) program assigned to the Forest.

a. Criteria and Assumptions

1) Meet RPA assignments in timber harvest as a minimum, and not to increase harvest over 10 percent of the assignment in any given period.

2) Meet RPA assignments for livestock production as a minimum.

3) Meet RPA assignments for recreation in RVD's as a minimum.

4) Meet RPA assignments for wildlife related recreation in RVD's as a minimum.

b. Constraints

1) *Constraint:* To harvest at least at the level assigned to the Forest as directed by the 1980 RPA program.

Purpose: To determine if the Forest could meet the timber harvest levels along with other RPA levels simultaneously.

Rationale: To meet RPA assignments.

Tradeoff: Reduced timber harvest with a moderate fluctuation in harvest and increased acres designated to a timber emphasis by 6,552 acres. This increased the over all timber costs and decreased the timber benefits.

2) *Constraint:* To provide sufficient forage to meet the RPA assigned level for animal unit months(AUM's).

Purpose: To determine if the Forest could achieve the RPA assigned level of 876 M AUM's in

the first period (5 years) and 1007 M AUM's by 2030.

Rationale: TO meet RPA assignments.

Tradeoff: The increase in aums increased the cost of the range program by 4.4 MM, thus reducing the present net value and increasing the annual budget. The RPA level could not be reached in the year 2021-2030. This shifted over 626 M acres into a range emphasis.

3) *Constraint:* To provide recreational opportunities that would meet the projected values assigned by RPA.

Purpose: To determine if the Forest has the capability to meet future recreational demands as determined through RPA assessment, that being 624 M RVD'S in the first Period (5 years) and reaching a level of 858 by 2030.

Tradeoff: The Forest could meet the RPA levels and exceed them. This caused a shift in land designation to recreation emphasis from 33 M acres to 51 M acres.

4) *Constraint:* To provide wildlife related recreational opportunities that would meet the projected values assigned by RPA.

Purpose: To determine if the Forest has the capability to meet future demands for other goods and services while meeting the projected values assigned by RPA. The RPA assigned level is 456 M RVD'S the first period (5 years) and 527 M RVD'S by 2030.

Tradeoff: This constraint had no impact on the present net value.

3. Alternative 3

The purpose of this alternative is to determine the level of goods and services that could be realized when the Forest maximized its present net value.

a. Criteria and Assumptions

1) To maintain local saw mills that are classified as dependent on the timber harvest from the Forest. Floors of timber harvest are therefore developed for the three timber producing Districts.

2) It is assumed that it would be infeasible for ranchers to transport their livestock from one end of the Forest to the other. Therefore District floors are developed for all Districts to ensure a reasonable level of livestock forage available.

3) The Forest has a wide range of opportunities to produce goods and service that the consumer is demanding. This alternative is developed to assess the best way to achieve a good mix of the opportunities.

b. Constraints

1) *Constraint:* Sequential bounds are set in order to let timber volume fluctuate from the preceding period. Timber harvest was allowed to increase or decrease by 20 percent and 10 percent respectively.

Purpose: To reduce impact on present net value.

Rationale: Through the benchmark analysis it was determined that sequential bounds with no other constraints had less impact on present net value than nondeclining yield.

Tradeoff: Insignificant difference on impact of present net value.

2) *Constraint:* Timber harvest floors at a 2.45 MMBF level for the three timbered Districts.

Purpose: To maintain continuity in the timber program and to provide community stability.

Rationale: Fluctuating timber programs are not the most cost efficient for a given District because of the lag in employment of qualified personnel. Several small saw mills are dependent on the harvest from the Forest in order to stay in business. Therefore, a somewhat uniform timber program will help them maintain stability and add to the community.

Tradeoff: Timber harvest in the first two decades causes a negative impact on the present net value.

3) *Constraint:* Animal unit month floors are set at a total of 675 M AUM's as established by the Districts. This is about 80 percent of current levels.

Purpose: To provide local stability to the livestock industry.

Rationale: Movement of livestock from one District to another in most cases is unprofitable and unreasonable because of the distances between District. In order to maintain a viable livestock program for ranchers who are dependent on Forest land to maintain their program, the AUM's need to be maintained on each District.

Tradeoff: Changes in designation to range emphasis on 15.2 M acres did not increase the range program and had little change in the benefits. Thus no change in the present net value.

4. Alternative 4

The purpose was to analyze the effects of emphasizing the wilderness and recreation resources.

a. Criteria and Assumptions

1) The Forest has a potential to increase wilderness opportunities without a significant impact on other resources.

2) Wilderness limits dispersed recreational opportunities, but the Forest still could maintain a high level of recreational opportunities with wilderness designations.

3) Recreational opportunities can be increased through timber harvest. Therefore, timber harvest is controlled by setting sequential bounds to allow for harvest in favor of recreation opportunities.

4) Recreation activities are an important resource on the Forest.

b. Constraints

1) *Constraint:* Sequential bounds of upper 20 percent and lower of 10 percent of previous period (5 year) timber harvest levels are set.

Purpose: To allow fluctuation of the timber program within a give range from one period to the next.

Rationale: Some timber harvest enhances recreation opportunities by providing access into areas. Therefore, as timber harvest is needed to maintain local mills, it would be done in areas that would increase recreational opportunities.

Tradeoff: A decrease in timber value and an increase in timber cost, which have a negative effect on the present net value.

2) *Constraint:* Recreation RVD's floor is set for the Forest at 85 percent of the potential.

Purpose: To maintain a high level of recreation designation.

Rationale: Originally the level is at 100 percent of potential to maintain the optimal level of recreational outputs. This level is reduced to the 85 percent level in order to meet other constraints.

Tradeoff: Reduction in recreational opportunity mainly in the dispersed types of recreation. Total values are decreased, and the total cost increased, thus having a negative impact on the present net value.

3) *Constraint:* Wilderness emphasis constraint on all roadless areas totaling just under 259 M acres.

Purpose: To optimize the wilderness opportunity of the Forest.

Tradeoff: Reduced timber base, limited dispersed recreational opportunities, reduced intensity of range and wildlife management, and areas removed from further oil and gas development. The overall impact on the present net value is a decrease of \$451 MM.

5. Alternative 5

The purpose of this alternative is to continue the current level of outputs provided by unit plans, multiple-use plans, and long-range goals and objectives developed for the Forest.

a. Criteria and Assumptions

1) Implement fully the current programs to achieve outputs as they have been outlined in the existing plan.

2) Maintain current levels of outputs and determine the land designation that is best suited for maintaining these production levels.

b. Constraints

1) *Constraint:* Nondeclining yield of timber harvest.

Purpose: To provide a sustained yield of timber products from the Forest and a manageable timber program.

Rationale: Assure a constant yield of timber products in order that management would not have to alter programs to meet personnel needs.

Tradeoff: Nondeclining yields affect the present net value in that it forces timber harvest into periods where there would be no harvest, thus increasing the cost of the timber program and reducing the total benefits.

2) *Constraints:* Budgets would be constrained to a given level needed and not to be exceeded in order to do a quality job in management of all resources.

Purpose: To restrict expansion of the budget beyond a given level.

Rationale: Presently some of the current programs have not been adequately funded to the level needed to do a quality job of management. The upper level restriction would limit dollars and would control the level of output to match the dollars in a cost efficient manner.

Tradeoff: The budget constraint is only limiting in the first period (5 years), but did not have any effect on the output.

3) *Constraint:* Forest ten year timber program.

Purpose: To execute the timber program of the Forest.

Rationale: To test the ten year timber program of the Forest as to location and feasibility.

Tradeoff: Require a level of timber harvest in the first two periods (ten years) in areas that are not as cost efficient as elsewhere, thus having a negative impact on the present net value.

4) *Constraint:* Timber floor of 1.5 MMBF and a ceiling of 7.0 MMBF for the Forest.

Purpose: To maintain a timber program on the Forest at a level that could support local mills and would not exceed projected levels.

Rationale: To support local communities and maintain a moderate level of timber management on the Forest.

Tradeoff: Reduced the nondeclining yield to 6.7 MMBF, which reduced the total timber value and cost did not decrease for the same proportion, thus having a negative impact on the present net value. This increased the total land designation for timber emphasis by about 16 M acres.

5) *Constraint:* Forest and District floors for AUM's.

Purpose: To maintain obligated AUM's on the Forest by District.

Rationale: The Forest has a legal contract to allow a given number of AUM's to graze. In order to meet that obligation, floors are estab-

lished by Districts. This also helps to maintain community stability for dependant communities.

Tradeoff: Increase in range cost with little change in the benefit. This shifted 7 M acres into a range intensity management designation. Each of these activities would have a negative impact on the present net value.

6) *Constraint:* Recreational opportunities floors established at current level with normal allowance for increases.

Purpose: To maintain the current level of RVD's and to allow an increase to meet future demands by population increases.

Rationale: Current levels of RVD's are demanded for the Forest. Therefore, they need to be constrained to maintain the relationship between other resources.

Tradeoff: A shift of 17 M acres into a recreation emphasis designation. Increased the benefits for recreation and decreased the total cost, therefore having a positive effect on present net value.

6. Alternative 5a

The purpose of this alternative is to continue current management direction as shown under Alternative 5 and to designate an additional 200 M acres for roadless and/or wilderness management.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as Alternative 5 except for the addition of the roadless and/or wilderness acres.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 5, with the exception of the additional acres of roadless and/or wilderness management.

1) *Constraint:* Control on management emphasis to allow an additional 200 M acres to be managed under a roadless and/or wilderness theme.

Purpose: To determine the effects of a large increase of roadless management on benefits and cost to maintain other resource outputs.

Rationale: To allow the model to select those areas that qualified as roadless and/or wilderness that would have the least impact on the present net value.

Tradeoff: A shift in all management emphases into wilderness emphasis. Increases in all resource cost except oil, and a decrease in values for timber, oil and wildlife. Range and recreation values stayed the same.

7. Alternative 5b

The purpose of this alternative is to continue current management direction as shown under Alternative 5 and designate selected areas to a

roadless and/or wilderness management with emphasis on more roadless than wilderness acres.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as Alternative 5 except for the addition of the roadless and/or wilderness acres.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 5 with the exception for the additional acres of roadless and/or wilderness management.

1) *Constraint:* Control on management emphasis to allow selected areas to be managed under a roadless and/or wilderness theme.

Purpose: To determine the effects of the increase of roadless management on benefits and cost to maintain other resource outputs.

Rationale: To designate selected areas that qualified as roadless and/or wilderness and determine the impact on the present net value.

Tradeoff: A shift in management emphasis into wilderness emphasis. Increases in total resource cost and a decrease in total values.

8. Alternative 5c

The purpose of this alternative is to continue current management direction as shown under Alternative 5 and designate selected areas to roadless and/or wilderness management with emphasis on roadless.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as Alternative 5 except for the addition of the roadless and/or wilderness acres.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 5 with the exception of the additional acres of roadless and/or wilderness management.

1) *Constraint:* Control on management emphasis to allow selected areas to be managed under a roadless and/or wilderness theme.

Purpose: To determine the effects of an increase of roadless management on benefits and cost to maintain other resource outputs.

Rationale: To designate selected areas that qualify as roadless and/or wilderness and determine the impact on the present net value.

Tradeoff: A shift in management emphasis into wilderness emphasis. Increases in total resource cost and a decrease in total values.

9. Alternative 6

The purpose of this alternative is continue the current level of outputs, and the management

direction from the unit plans, and to develop management strategies in response to changing needs in a cost efficient manner consistent with local and National demands.

a. Criteria and Assumptions

1) To implement fully the current programs, to achieve outputs as they have been outlined in existing plan.

2) Maintain current levels of outputs and determine the land designation that is best suited for maintaining these production levels.

3) To control management emphasis on certain areas to meet local and National demands.

b. Constraints

1) *Constraint:* Nondeclining yield of timber harvest.

Purpose: To provide a sustained yield of timber products from the Forest and a manageable timber program.

Rationale: Assure a constant yield of timber products in order that management would not have to alter programs to meet personnel needs.

Tradeoff: Nondeclining yield affects present net value in that it forces the timber harvest into periods where there would be no harvest, thus increasing the cost of the timber program and reducing the total benefits.

2) *Constraint:* To not exceed the Forest ten year timber program.

Purpose: To execute the timber program of the Forest.

Rationale: To test the ten year timber program of the Forest as to location and feasibility.

Tradeoff: Departure from the ten year plan in some areas to more cost efficient areas having a positive impact on the present net value.

3) *Constraint:* Timber harvest floors at a 2.9 MMBF level and a ceiling level at 9.2 MMBF for the timbered Districts.

Purpose: To maintain continuity in the timber program and to provide community stability.

Rationale: Fluctuating timber programs are not cost efficient for a given District because of the lag in employment of qualified personnel. Several small saw mills are dependent on the harvest from the Forest in order to stay in business. Therefore, a somewhat uniform timber program will help them maintain stability and add to the community.

Tradeoff: Timber harvest in the first two decades causing a negative impact on the present net value.

4) *Constraint:* Timber ceiling of 8.0 MMBF for the Forest.

Purpose: To control the timber program on the Forest so that it would not exceed projected levels.

Rationale: Timber demands for the Forest are not expected to exceed this level of timber management.

Tradeoff: Reduced the nondeclining yield to 6.7 MMBF which reduced the total timber value and increased the cost, thus having a negative impact on the present net value. Increased total land designation to a timber emphasis by about 6 M acres.

5) *Constraint:* Forest and District floors for AUM's.

Purpose: To maintain obligated AUM's on the Forest by District.

Rationale: The Forest has a legal contract to allow a given number of AUM's to graze. In order to meet that obligation, floors are established. This also helps to maintain community stability for dependent communities.

Tradeoff: Increase in range cost with little change in the benefit. This shifted 23 M acres into a range intensity management designation. Each of these activities would have a negative impact on the present net value.

6) *Constraint:* Control on management emphasis.

Purpose: To control amount of acres going to a given emphasis in a given area.

Rationale: Certain areas have special considerations. Therefore, to insure that these areas receive the proper designation they are constrained to reflect their uniqueness.

Tradeoff: Restriction of the model to make a designation totally based on the best present net value.

10. Alternative 6a

The purpose of this alternative was to continue the current level of outputs and the management direction from the unit plans, and to develop management strategies in response to changing needs in a cost efficient manner consistent with local and National demands, with a small increase in wilderness and roadless areas to broaden the range of analysis in respect to wilderness management.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as shown under Alternative 6, with the exception of selected area being designated as roadless and/or wilderness management.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 6 with the exception of a little higher level of timber floors and ceiling, range floors, and the additional acres of roadless and/or wilderness management.

1) *Constraint:* Control on management emphasis to allow selected areas to be managed under a roadless and/or wilderness theme.

Purpose: To determine the effects of an increase of roadless management on benefits and cost to maintain other resource outputs.

Rationale: To designate selected areas that qualify as roadless and/or wilderness and determine the impact on the present net value.

Tradeoff: A shift in management emphasis into wilderness emphasis. Increases in total resource cost and a decrease in total values.

11. Alternative 6b

The purpose of this alternative was to continue the current level of outputs and the management direction from the unit plans, and to develop management strategies in response to changing needs in a cost efficient manner consistent with local and National demands, with an increase in wilderness and roadless areas, to broaden the range of analysis in respect to wilderness management.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as shown under Alternative 6, with selected areas being designated to roadless and/or wilderness management.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 6 with the exception of a little higher level of timber floors and ceiling, range floors, and the additional acres of roadless and/or wilderness management.

1) *Constraint:* Control on management emphasis to allow selected areas to be managed under a roadless and/or wilderness theme.

Purpose: To determine the effects of an increase of roadless management on benefits and cost to maintain other resource outputs.

Rationale: To designate selected areas that qualify as roadless and/or wilderness and to determine the impact on the present net value.

Tradeoff: A shift in management emphasis into wilderness emphasis. Increases in total resource costs and a decrease in total values.

12. Alternative 7

The purpose of this alternative was to emphasize a high level of market goods and services that will contribute to the National as well as the local economies in the most cost efficient manner consistent with good sound land management practices.

a. Criteria and Assumptions

1) To optimize the mix of market commodities from the Forest, primarily referring to timber, oil and range forage.

2) To allow the timber harvest to fluctuate between a Forest floor of 6.0 MMBF and the level of 13.6 MMBF.

b. Constraints

1) *Constraint:* Set sequential bounds in order to let timber volume fluctuate from the preceding period. Timber harvest is allowed to increase or decrease by 20 percent and 10 percent respectively.

Purpose: To reduce impact on present net value.

Rationale: Through the benchmark analysis it is determined that sequential bounds with no other constraints had less impact on present net value than nondeclining yield.

Tradeoff: Insignificant difference on impact of present net value.

2) *Constraint:* Timber harvest floors at a 6.0 MMBF level for the three timbered Districts.

Purpose: To maintain continuity in the timber program and to provide community stability.

Rationale: Fluctuating timber programs are not the most cost efficient management for a given District, because of the lag in employment of qualified personnel. Several small saw mills are dependent on the harvest from the Forest in order to stay in business. Therefore, a somewhat uniform timber program will help them maintain stability and add to the community.

Tradeoff: Timber harvest in the first two decades causes a negative impact on the present net value.

3) *Constraint:* Set animal unit month at a total of 853 M AUM's for the total Forest based on District floors.

Purpose: To provide local stability to the livestock industry.

Rational: Movement of livestock from one District to another in most cases is unprofitable and unreasonable because of the distances between District. In order to maintain a viable livestock program for ranchers who are dependent on Forest land to maintain their program, AUM's need to be maintained on each District.

Tradeoff: Changes in designation to range emphasis on 661 M acres, and increased cost in the range program, with some change in the benefits and thus a reduction in the present net value.

13. Alternative 7a

The purpose of this alternative is to emphasize a high level of market goods and services that will contribute to the National as well as the local economies in the most cost efficient manner consistent with good sound land management practices, and to broaden the analysis in respect to wilderness and roadless areas.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as shown under Alternative 7, with selected areas being designated to roadless and/or wilderness management.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 7, with the exception of the additional acres of roadless and/or wilderness management.

1) *Constraint:* Control on management emphasis to allow selected areas to be managed under a roadless and/or wilderness theme.

Purpose: To determine the effects of an increase of roadless management on benefits and cost to maintain other resource outputs.

Rationale: To designate selected areas that qualify as roadless and/or wilderness and determine the impact on the present net value.

Tradeoff: A shift in management emphasis into wilderness emphasis. Increases in total resource cost and a decrease in total values.

14. Alternative 7b

The purpose of this alternative is to emphasize a high level of market goods and services that will contribute to the National as well as the local economies in the most cost efficient manner consistent with good sound land management practices, and to broaden the analysis in respect to wilderness.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as shown under Alternative 7, with selected areas being designated to roadless and/or wilderness management.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 7 with the exception of the changes in the acres for roadless and/or wilderness management.

1) *Constraint:* Control on management emphasis to allow selected areas to be managed under a roadless and/or wilderness theme.

Purpose: To determine the effects of an increase of roadless management on benefits and cost to maintain other resource outputs.

Rationale: To designate selected areas that qualify as roadless and/or wilderness and determine the impact on the present net value.

Tradeoff: A shift in management emphasis into wilderness emphasis. Increases in total resource cost and a decrease in total values.

15. Alternative 8 (Current Management)

The purpose of this alternative was to continue

the current level of outputs based on the current direction and at present budget levels.

a. Criteria and Assumptions

1) The Forest would maintain the obligated level of AUM's.

2) Timber harvest floors would be at the level that traditionally has been harvested over the past few years.

b. Constraints

1) *Constraint:* Not to exceed the Forest ten year timber program.

Purpose: To allow development and execution of the timber program of the Forest.

Rationale: To test the ten year timber program of the Forest as to location and feasibility.

Tradeoff: Required a level of timber harvest in the first two periods (ten years) in areas that are not cost efficient, thus having a negative impact on the present net value.

2) *Constraint:* Set a timber floor of 1.0 MMBF and a ceiling of 7.0 MMBF for the Forest.

Purpose: To maintain a timber program on the Forest at a level that could support local mills and would not exceed projected levels.

Rationale: To support local communities and maintain a moderate level of timber management on the Forest.

Tradeoff: Reduced the nondeclining yield to 2.5 MMBF which reduced the total timber value and the total cost. This has a negative impact on the present net value, and increased total land designated for timber emphasis by about 2 M acres.

3) *Constraint:* Set Forest and District floors for AUM's.

Purpose: To maintain obligated AUM's on the Forest by District.

Rationale: The Forest has a legal contract to allow a given number of AUM's to graze. In order to meet that obligation, floors by Districts are established. This also helps to maintain community stability for dependent communities.

Tradeoff: Decrease in range costs with similar change in the benefit. This shifted 12 M acres into a range intensity management designation. Each of these activities would have a negative impact on the present net value.

4) *Constraint:* Budget constrained to average of FY 82, 83 and 84 with a 5 percent increase per planning period (5 years).

Purpose: To emphasize the effects of current budget levels.

Rationale: Current budget levels have not been adequate to maintain a quality level of management in all areas. Therefore, the question to be answered is how should current levels of funding be based on commitments.

Tradeoff: Current AUM's are maintained. Timber harvest decreased to the 3 MMBF level. Oil production decreased to about half of its potential. Recreation stayed about the same. Overall cost dropped by \$69 MM and benefits decreased by \$2021 MM. There is a shift of over a million acres into a minimum level of management on about 50 percent of the Forest.

16. Alternative 9 (Departure from Alternative 6)

The purpose of this alternative was to continue the current level of outputs and the management direction from the unit plans, and to develop management strategies in response to changing needs in a cost efficient manner consistent with local and National demands, while relaxing the timber constraint of nondeclining yield.

a. Criteria and Assumptions

The criteria and assumptions underlying the development of this alternative are the same as shown under Alternative 6, with the exception of removal of the nondeclining yield to determine the effect on land designations and present net value.

b. Constraints

The constraints of this alternative are the same as those described under Alternative 6 with the exception of the removal of nondeclining yield constraint.

1) *Constraint:* Allow timber harvest to fluctuate within a given set of bounds set by District floors and a Forest ceiling.

Purpose: To test the affect that nondeclining yield may have on Alternative 6.

Rationale: In the benchmark analysis, sequential bounds improved the present net value under given constraints. This alternative endeavored to find out if the same results would occur given the set of constraints for Alternative 6.

Tradeoff: Areas designated to a timber emphasis increased by about 2 M acres over Alternative 6 while minimum level decreased by 11 M acres. The overall effect is an increase in the present net value of \$5 MM over Alternative 6.

17. Alternative 10 (Proposed Action)

The purpose of this alternative is to adjust the Alternative 6 to respond to public comments provided during the public involvement period, and to develop management strategies in response to these needs in a cost efficient manner consistent with local and National demands.

a. Criteria and Assumptions

1) To implement fully the current programs, to achieve outputs as they have been outlined in existing plan.

2) Maintain current levels of outputs and determine the land designation that is best

suited for maintaining these production levels.

3) To control management emphasis on certain areas to meet local and National demands.

4) To be responsive to public comments expressed during the public involvement period of the draft Environmental Impact Statement.

b. Constraints

1) *Constraint:* Nondeclining yield of timber harvest.

Purpose: To provide a sustained yield of timber products from the Forest and a manageable timber program.

Rationale: Assure a constant yield of timber products in order that management would not have to alter programs to meet personnel needs.

Tradeoff: Nondeclining yield affects present net value in that it forces the timber harvest into periods where there would be no harvest, thus increasing the cost of the timber program and reducing the total benefits.

2) *Constraint:* To not exceed the Forest ten year timber program.

Purpose: To execute the timber program of the Forest.

Rationale: To test the ten year timber program of the Forest as to location and feasibility.

Tradeoff: Departure from the ten year plan in some areas to more cost efficient areas having a positive impact on the present net value.

3) *Constraint:* Timber harvest floors at a 2.9 MMBF level and a ceiling level at 9.2 MMBF for the timbered Districts.

Purpose: To maintain continuity in the timber program and to provide community stability.

Rationale: Fluctuating timber programs are not cost efficient for a given District because of the lag in employment of qualified personnel. Several small saw mills are dependent on the harvest from the Forest in order to stay in business. Therefore, a somewhat uniform timber program will help them maintain stability and add to the community.

Tradeoff: Timber harvest in the first two decades causing a negative impact on the present net value.

4) *Constraint:* Timber ceiling of 3.0 MMBF for the Forest.

Purpose: To control the timber program on the Forest so that it would not exceed projected levels.

Rationale: Timber demands for the Forest are not expected to exceed this level of timber management.

Tradeoff: Reduced the nondeclining yield to 6.4 MMBF which reduced the total timber value and decreased the total cost, thus having a negative impact on the present net value. Increased total land designation to a timber emphasis by about 6 M acres.

5) *Constraint:* Forest and District floors for AUM's.

Purpose: To maintain obligated AUM's on the Forest by District.

Rationale: The Forest has a legal contract to allow a given number of AUM's to graze. In order to meet that obligation, floors are established. This also helps to maintain community stability for dependent communities.

Tradeoff: Decrease in range cost with similar change in the benefit. This shifted 111 M acres into a range intensity management designation. Each of these activities would have a negative impact on the present net value.

6) *Constraint:* Forest ceiling for AUM's at 875 M.

Purpose: To maintain current levels of AUMs and not to exceed that level.

Rationale: The Forest has a potential to increase forage and allow additional AUMs. However, the increased forage is best served to provide additional soil and water protection as well as benefits to wildlife species.

Tradeoff: Decrease in AUMs and a reduction in operating costs. Thus, an over all decrease in the present net worth of \$443 MM.

7) *Constraint:* Control on management emphasis.

Purpose: To control amount of acres going to a given emphasis in a given area.

Rationale: Certain areas have special considerations. Therefore, to insure that these areas receive the proper designation they are constrained to reflect their uniqueness.

Tradeoff: Restriction of the model to make a designation totally based on the best present net value. Forcing more acres into a high intensity of Range management.

VIII. Summary of Effects of Constraints, Selected Benchmarks, and Alternatives

A. Overview

The purpose of estimating and displaying these effects is to compare present net value, social and economic impacts, outputs of goods and services, and overall protection and enhancement of environmental resources. This comparative analysis is the basis for evaluating alternatives and selecting a proposed action, which are planning steps 7 and 8. This section focuses on the economic effects of alternatives and benchmarks. The constraints are discussed in detail in Appen-

dix B, Section VII, and social and environmental effects are discussed in Chapters II and IV.

B. Process for Evaluating Significant Constraints

Management objectives of benchmarks and alternatives are achieved by constraining FORPLAN as described in Section VII. The efficiency tradeoffs of individual objectives can be determined by comparing the present net value of a FORPLAN solution which meets the objective and one which does not. The change in present net value is the efficiency tradeoff of achieving a specific objective if both solutions have efficient prescriptions, both solutions maximize present net value, and the constraints are cost-efficient. The efficiency tradeoff was not determined for individual alternative objectives because of the prohibitive costs of analyzing every constraint used to develop alternatives. But by comparing alternatives, the economic tradeoffs of the groups of objectives which have the most significant impact on present net value can be determined. These efficiency tradeoffs can then be compared to environmental and social consequences to help identify the alternative which maximizes net public benefits.

A major factor in the economic tradeoff analysis is the order in which the objectives are analyzed. For example, the economic tradeoff of meeting management objectives A and B can be determined by comparing FORPLAN solutions with various combinations of the two objectives. The change in present net value due to meeting only A may be \$5 MM, and the change due to meeting only B may be \$11 MM. However, the change due to meeting both A and B will probably be less than \$16 MM. In addition, the cost of meeting objective A in one alternative will not necessarily be the same as meeting the same objective in another alternative. Therefore, the economic tradeoffs discussed in this section are only relevant to the actual alternative where the objectives are analyzed.

C. Tradeoffs Among Alternatives

The discussion in this part focuses on economic tradeoffs. Resource outputs and socioeconomic effects are displayed in Chapter II, and environmental effects are discussed in Chapters II and IV. Table B-14 displays the efficiency tradeoffs and constraints used by alternative as it is compared to Benchmark Maximum PNV. Table B-15 displays the present net value and the nonpriced benefits by alternative.

1. Response to Issues

Alternatives are designed to address the five major issues. A single alternative cannot fully resolve all issues because of the conflicts among issues. However, each alternative addresses the issues either positively or negatively. A detailed

discussion of issues is in Appendix A, and a display of how the alternatives address the issues and concerns is in Table B-16.

2. Economic Tradeoffs

This discussion identifies the economic consequences of implementing the alternatives by comparing each alternative to Benchmark Maximum PNV and to at least three other alternatives: the closest alternative in terms of reduced discounted costs, the closest alternative in terms of higher present net value, and Alternative 8 (Current Management). In some cases, alternatives with similar objectives are also compared. The comparisons form the basis for balancing economic tradeoffs with nonpriced resource outputs in selecting the proposed action. In this discussion, economic efficiency only considers the monetary value of the Forest as measured by present net value.

One measure of the cost of an alternative is the discounted cost which represents the equivalent payment required by the government to implement an alternative. The minimum cost for federal ownership is defined by Benchmark MIN as \$33 million. Table B-17 displays the discounted costs, discounted benefits, and present net value in order of increasing costs. In general, the costs of alternatives increase with the size of the timber and intensity of the range programs. These costs range from \$106 million for Alternative 8 (Current Management) to \$192 million for Alternative 7. By comparing the benefits and costs of a alternative with the next closest reduced discounted cost alternative, the economic consequences of the additional expenditure can be compared to the additional nonpriced benefit values.

Another measure of the cost of an alternative is the change in present net value between alternatives. The maximum net value of the Forest is defined by Benchmark Maximum PNV as \$4249 million. The difference between \$4249 million and the present net value of an alternative represents the foregone investment opportunity to the government for implementing that alternative (foregone economic benefits). Table B-18 displays the discounted costs and benefits by resource and the present net value in order of decreasing present net value. In general, the present net value of alternatives increases with the intensity of the mineral program. Changes in the mineral program are caused by constraints which preclude mineral development over the landscape. By comparing each alternative with the alternative having the next highest present net value, the economic tradeoffs can be compared.

The economic consequences of changing from the current land designation, output schedule, and budget are defined by comparing the present net value of the alternatives with the present net value of Alternative 8 (Current Management),

TABLE B-14
ALTERNATIVE FOREGONE ECONOMIC BENEFITS AND CONSTRAINT FLOW CHART

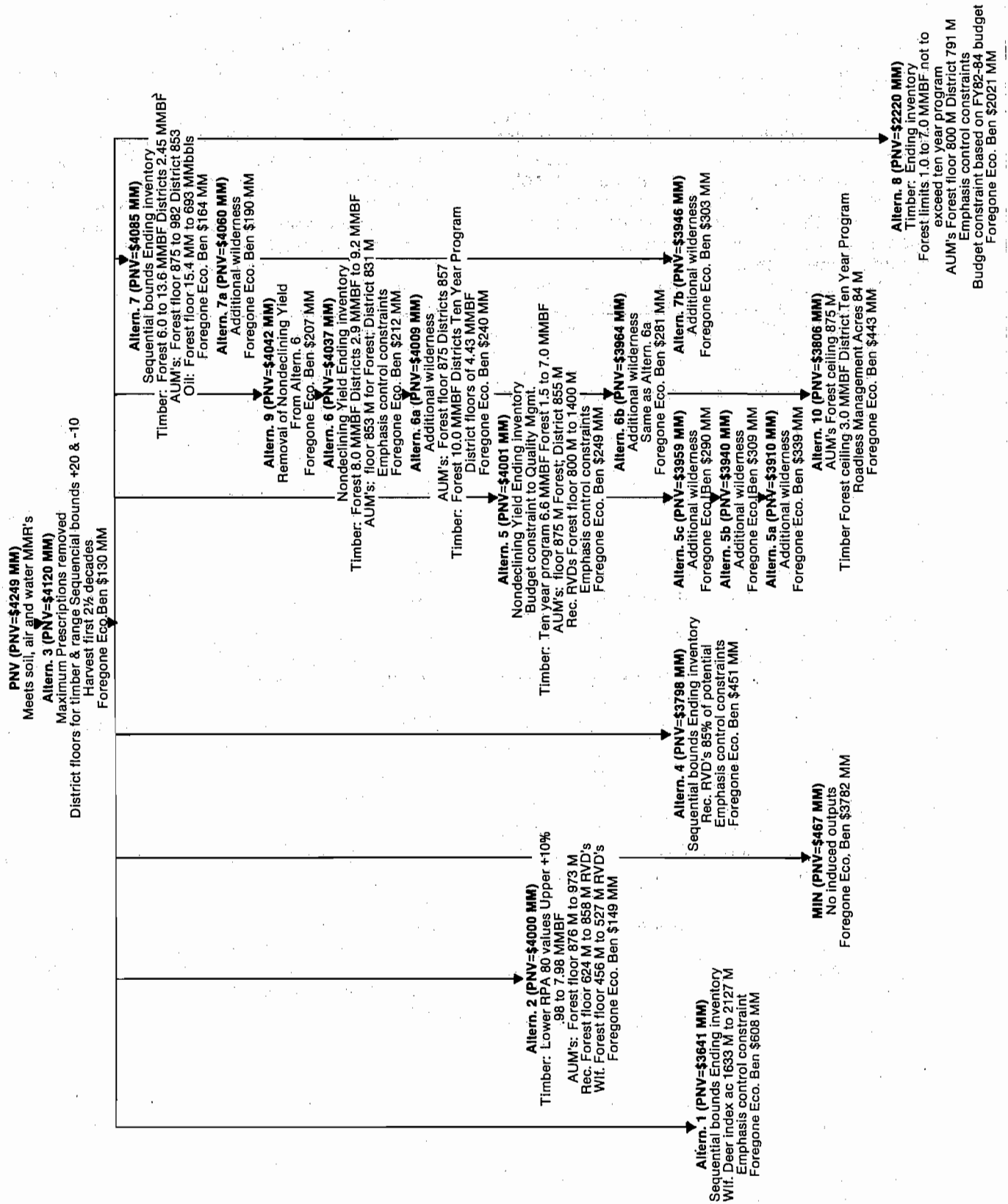


TABLE B-15
PRESENT-NET VALUE AND NONPRICED BENEFITS BY ALTERNATIVE
Average Annual Output for Decade 1

Resources	Unit of Measure	1980				Alternative										CM 8	Dep 9	PA 10
		1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b			
Present net value (4%)	MM\$	3641	4000	4120	3798	4001	3910	3940	3959	4037	4009	3968	4085	4060	3946	2220	4042	3806
Wilderness management	M Acres	(In addition to 339,841 acres of A/B Wilderness)																
Decade 1		129.0	0.3	0.0	242.3	0	176.6	93.5	11.0	11.0	36.6	105.8	9.8	47.6	105.2	18.8	9.8	11.8
Roadless management	M Acres	1983 = 265,920																
Decade 1		116.8	144.2	128.2	0.0	171.8	45.9	128.5	184.4	52.0	118.5	54.8	92.8	87.7	68.0	189.4	120.6	84.1
EVC-4 (Disturbed)	M Acres	1980 = 122																
Decade 1		219	272	277	249	270	253	265	265	268	265	263	271	266	259	146	269	262
Wildlife habitat improvement	Acres	1980 Base = 75 Acres																
Decade 1		1252	992	720	757	688	688	722	689	605	606	575	476	477	451	10	647	344
Elk effective acres	M acres																	
Decade 1		461	444	437	451	447	448	441	441	450	438	447	436	439	445	453	448	441
Elk provided capacity	Elk	1980 Base Year = 950 Elk																
Decade 1		1058	826	680	845	835	834	805	937	966	686	706	677	685	698	1042	845	972
Deer effective acres	M Acres																	
Decade 1		1598	1396	1457	1475	1421	1419	1414	1414	1431	1408	1411	1383	1386	1392	1431	1430	1466
Deer provided capacity	M Deer	1980 Base Year = 21,000 Deer																
Decade 1		30.2	23.4	23.8	25.5	24.0	23.9	23.7	26.0	24.7	22.5	22.6	21.9	22.0	22.1	26.5	24.2	27.7
Grouse effective acres	M Acres	1980 Base Year = 202,000 Acres																
Decade 1		235	197	208	209	202	202	202	202	204	202	201	196	196	196	200	204	208
Old growth on suitable timberland in 75 years	%	42	67	49	64	69	67	64	68	59	58	43	53	56	91	69	89	
Fish habitat improvement	Acres	1980 Base = 0 Acres																
Decade 1		28	22	24	26	24	24	25	24	24	24	22	22	22	21	3	24	24
Catchable trout nonwilderness streams	M Fish	1980 Base = .3 M																
Decade 1		2.8	2.2	2.4	2.6	2.4	2.4	2.5	2.4	2.4	2.4	2.2	2.2	2.2	2.1	0.3	2.4	2.4
Reforestation natural	Acres																	
Decade 1		374	206	523	306	499	751	751	751	397	755	332	545	665	587	398	388	340
Timber stand improvement	Acres																	
Decade 1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average annual runoff meeting water quality standards (thousands of acre feet)																		
75 year average		1,040	1,048	1,042	1,041	1,041	1,040	1,040	1,041	1,041	1,041	1,041	1,048	1,048	1,048	1,045	1,041	1,041
Average annual runoff (total in thousands of acre feet)																		
75 year average		1,080	1,100	1,092	1,090	1,091	1,090	1,089	1,091	1,090	1,090	1,091	1,100	1,100	1,099	1,095	1,090	1,090
Local Forest-related employment		(Jobs over 4202 for base year 1980)																
Decade 1		1980	3107	3310	2856	3107	3158	3125	3103	3120	3168	2994	3186	3094	2980	725	3105	2772
Local Forest-related income	MM\$	(over \$162 MM in base year 1980)																
Decade 1		103	147	150	131	142	142	141	140	145	144	142	148	146	140	23	145	129
Research natural areas	Acres	1980 Base = 406 Acres																
Decade 1		2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365
Forest work force	Work-year equiv.	(Additional WYE above 1980 base of 224)																
Decade 1		66	54	66	66	66	86	91	78	66	91	74	74	66	66	-40	62	50

Benchmark CUT and Benchmark CUF. Benchmark CUT reflects the level of outputs the Forest could produce under a current management designation given present funding levels. This is based on doing a complete and effective job of management for all resources. When compared to Benchmark CUF, which is current direction with no funding limitations, livestock AUM's decreased by 267 M in the first decade and by the seventh the gap had increased by 303 M. Value of oil decreased over the planning horizon by \$188 MM. Recreation and wildlife values decreased by \$51 MM. Timber value increased, although timber harvest decreased. It started out at the same level and steadily decreased over the planning horizon.

The foregone economic benefits between these benchmarks was \$239 MM.

In order to meet current obligations in range and maintain a timber program with the present level of funding, land designation needed to be changed. Alternative 8 (Current Management) reflects a current level of funding, while maintaining obligated AUM's and allowing a level of timber harvest to range between 1 and 7 MMBF. The overall costs are reduced with the exception of timber and range, which increased about \$6 MM in comparison to Benchmark CUT. The present net value decreased by \$996 MM. The majority of this decrease was a reduction in the mineral output (oil). One of the differences in this alternative

TABLE B-16
RESPONSIVENESS OF ALTERNATIVES TO ISSUES, CONCERNS, AND OPPORTUNITIES

Alternatives	1	2	3	4	5	ICO
1	Levels decrease from 875 M AUM's to 685 M AUM's by the 4 decade then back to 721 AUM M by the end of planning horizon	Oil production limited to protect wildlife habitat 302 MM barrels of oil over planning horizon	1.3MM acres designated to wildlife management 152 M acre woody draws and riparian areas under wildlife mgmt.	Road miles increase from 3803 miles to 4447 miles mainly for timber and mineral development	Maintain areas in low development status 116,788 acres roadless 129,037 acres wilderness addition	
2	Levels increase from 875 M AUM's to 973 M AUM's by the 9 decade	Limited management restrictions 345 MM barrels of oil over planning horizon	125 M acres designated to wildlife management 785 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5685 miles to develop resources	Recognize need for low development areas 144,221 acres roadless 339 acres wilderness addition	
3	Levels increase from 875 M AUM's to 898 M AUM's by the end of the planning horizon	Limited management restrictions 345 MM barrels of oil over planning horizon	373 M acres designates to wildlife management 8730 acres woody draws under wildlife mgmt.	Same as Alternative 2	Recognize need for low development areas 119,157 acres roadless No new wilderness acres	
4	Levels increase from 875 M AUM's to 898 M AUM's by the end of the planning horizon	Management limiting production levels 315 MM barrels of oil over planning horizon	327 M acres designates to wildlife management 6600 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 4448 miles to develop resources	No low development areas No designated roadless and no wilderness additions	
5	Levels increase from 875 M AUM's to 920 M AUM's by the end of the planning horizon	Moderate limitations production levels 334 MM barrels of oil over planning horizon	163 M acres designated to wildlife management 6500 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5098 miles to develop resources	Recognize need for low development areas 171,768 acres roadless No addition to wilderness	
5a	Same as Alternative 5	Limitation due to increase roadless Production levels 326 MM barrels of oil over planning horizon	115 M acres designated to wildlife management 855 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5295 miles to develop resources	Recognize need for low development areas 45,853 acres roadless 176,578 additional acres of wilderness	
5b	Same as Alternative 5	Limitation due to increase roadless Production levels 330 MM barrels of oil over planning horizon	145 M acres designated to wildlife management 785 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5273 miles to develop resources	Recognize need for low development areas 128,479 acres roadless 95,513 additional acres of wilderness	
5c	Same as Alternative 5	Limitation due to increase roadless Production levels 331 MM barrels of oil over planning horizon	161 M acres designated to wildlife management 3880 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5285 miles to develop resources	Recognize need for low development areas 184,445 acres roadless 11,000 additional acres of wilderness	
6	Levels increase from 875 M AUM's to 913 M AUM's by the end of the planning horizon	Moderate limitations production levels 337 MM barrels of oil over planning horizon	269 M acres designated to wildlife management 19 M acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5203 miles to develop resources	Recognize need for low development areas 51,675 acres roadless 11800 additional acres of wilderness	
6a	Lands increased from 875 M AUM's to 934 M AUM's by the end of the planning horizon	Limited limitations production levels 336 MM barrels of oil over planning horizon	179 M acres designated to wildlife management 11 M acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5664 miles to develop resources	Recognize need for low development areas 118,451 acres roadless 36,560 additional acres of wilderness	
6b	Levels increase from 875 M AUM's to 934 M AUM's by the end of the planning horizon	Limited limitations production levels 332 MM barrels of oil over planning horizon	138 M acres designates to wildlife management 11 M acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5628 miles to develop resources	Recognize need for low development areas 54,830 acres roadless 105,820 additional acres of wilderness	
7	Levels increase from 875 M AUM's to 977 M AUM's by the end of the planning horizon	Moderate limitations production levels 344 MM barrels of oil over planning horizon	121 M acres designated to wildlife management 785 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5685 miles to develop resources	Recognize need for low development areas 92,784 acres roadless 9800 additional acres of wilderness	
7a	Levels increase from 875 M AUM's to 975 M AUM's by the end of the planning horizon	Moderate limitations production levels 342 MM barrels of oil over planning horizon	144 M acres designated to wildlife management 785 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5678 miles to develop resources	Recognize need for low development areas 87,714 acres roadless 47,580 additional acres of wilderness	
7b	Same as Alternative 7a	Moderate limitations production levels 331 MM barrels of oil over planning horizon	90 M acres designated to wildlife management 785 acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5639 miles to develop resources	Recognize need for low development areas 67,954 acres roadless 105,220 additional acres of wilderness	

TABLE B-16 (continued)
RESPONSIVENESS OF ALTERNATIVES TO ISSUES, CONCERNS, AND OPPORTUNITIES

Alternative	1	2	3	4	5
8	Levels decrease from 875 M AUM's to 833 M AUM's by the end of the planning horizon	Significant limited production levels 167 MM barrels of oil over planning horizon	9,580 acres designated to wildlife management No woody draws acres under wildlife mgmt.	Road miles increase from 3803 miles to 4400 miles to develop resources	Recognize need for low development areas 132 M acres roadless 53,438 additional acres of wilderness
9	Levels increase from 875 M AUM's to 913 M AUM's by the end of the planning horizon	Moderate limitations production levels 338 MM barrels of oil over planning horizon	268 M acres designated to wildlife management 19 M acres woody draws under wildlife mgmt.	Road miles increased from 3803 miles to 5666 miles to develop resources	Recognize need for low development areas 116,584 acres roadless 16 M additional acres of wilderness
10	Levels started at 875 M AUM's and leveled off at 875 AUM's in the 9 period to the end of the planning horizon	Moderate limitations production levels 316 MM barrels of oil over planning horizon	359 M acres designated to wildlife management 19 M acres woody draws under wildlife mgmt.	Road miles increase from 3803 miles to 5650 miles to develop resources	Recognize need for low development areas 84,120 acres roadless 11,800 additional acres of wilderness

Issues

1. At what level of use and management intensity should livestock be managed on the Forest, considering public needs and demands for other resources?
2. How can the Forest provide for mineral exploration and development, in response to National demands for energy and strategic minerals, while also providing for other resource demands?
3. How and where will the resource base, including riparian zones and woody draws, be managed and protected for wildlife in view of competition from other resources?
4. What are the long term public and resource management access needs and how should they be resolved?
5. What is the long range need for low development areas and how should they be managed?

Alternative	6	7	8	9	10 (1978 dollars)
1	Harv L-2.5 H-3.5 MMBF Tentative suitable acres 83,360 Long term sustained yield = 7.4 MMBF	No new developed sites Wildlife RVD's 647 M Other RVD's 1280 M Sites Maintained 3 month season of use	219 M acres would be visually impacted and reduced to 149 M acres by the end of the planning horizon	PNV = \$3.641 MM Estimated returns to Treasury 1st decade = \$43.2 MM jobs created = 1980	Current budget FY85 of \$3.49 MM would have to be increased to \$6.26 MM to implement this alternative
2	Harv L-1.1 H-8.8 MMBF Tentative suitable acres 101,620 Long term sustained yield = 12.8 MMBF	One new developed site Wildlife RVD's 426 M Other RVD's 1418 M Sites maintained 3 month season of use	272 M acres would be visually impacted and reduced to 201 M acres by the end of the planning horizon	PNV = \$4.000 MM Estimated returns to Treasury = \$49.9 MM jobs created = 3107	Current budget FY85 of \$3.49 MM would have to be increased to \$5.88 MM to implement this alternative
3	Harv L-4.0 H-11.9 MMBF Tentative suitable acres 122,100 Long term sustained yield = 10.6 MMBF	New Sites developed Wildlife RVD's 505 M Other RVD's 1448 M Sites maintained 3 month season of use	277 M acres would be visually impacted and reduced to 206 M acres by the end of the planning horizon	PNV = \$4.120 MM Estimated returns to Treasury = \$50.0 MM jobs created = 3310	Current budget FY85 of \$3.49 MM would have to be increased to \$6.19 MM to implement this alternative
4	Harv L-3.1 H-9.3 MMBF Tentative suitable acres 74,310 Long term sustained yield = 6.4 MMBF	One new developed site Wildlife RVD's 503 M Other RVD's 1366 M Sites maintained 3 month season of use	249 M acres would be visually impacted and reduced to 184 M acres by the end of the planning horizon	PNV = \$3.798 MM Estimated returns to Treasury = \$46.7 MM jobs created = 2856	Current budget FY85 of \$3.49 MM would have to be increased to \$6.19 MM to implement this alternative
5	Harv L-4.1 H-7.0 MMBF Tentative suitable acres 94,3000 Long term sustained yield = 8.2 MMBF	New sites developed Wildlife RVD's 466 M Other RVD's 1460 M Sites maintained 3 month season of use	270 M acres would be visually impacted and reduced to 198 M acres by the end of the planning horizon	PNV = \$4.001 MM Estimated returns to Treasury = \$48.6 MM jobs created = 3107	Current budget FY85 of \$3.49 MM would have to be increased to \$6.19 MM to implement this alternative
5a	Harv L-6.6 H-7.0 MMBF Tentative suitable acres 82,930 Long term sustained yield = 7.0 MMBF	New sites developed Wildlife RVD's 459 M Other RVD's 1481 M Sites maintained 3 month season of use	253 M acres would be visually impacted and reduced to 184 M acres by the end of the planning horizon	PNV = \$3.910 MM Estimated returns to Treasury = \$48.4 MM jobs created = 3158	Current budget FT85 of \$3.49 MM would have to be increased to \$6.69 MM to implement this alternative
5b	Harv L-6.6 H-7.0 MMBF Tentative suitable acres 99,810 Long term sustained yield = 8.7 MMBF	One new developed site Wildlife RVD's 458 M Other RVD's 1469 M Sites maintained 3 month season of use	265 M acres would be visually impacted and reduced to 195 M acres by the end of the planning horizon	PNV = \$3.940 MM Estimated returns to Treasury = \$48.2 MM jobs created = 3125	Current budget FY85 of \$3.49 MM would have to be increased to \$6.79 MM to implement this alternative
5c	Harv L-6.6 H-7.0 MMBF Tentative suitable acres 104,290 Long term sustained yield = 9.0 MMBF	One new developed site Wildlife RVD's 466 M Other RVD's 1472 M Sites Maintained 3 month season of use	265 M acres would be visually impacted and reduced to 194 M acres by the end of the planning horizon	PNV = \$3.959 MM Estimated returns to Treasury = \$48.1 MM jobs created = 3103	Current budget FY85 of \$3.49 MM would have to be increased to \$6.49 MM to implement this alternative

TABLE B-16 (continued)
RESPONSIVENESS OF ALTERNATIVES TO ISSUES, CONCERNS, AND OPPORTUNITIES

Alternative	6	7	8	9	10 (1978 dollars)
6	Harv L-4.0 H-4.0 MMBF Tentative suitable acres 77,410 Long term sustained yield = 6.7 MMBF	New sites developed Wildlife RVD's 475 M Other RVD's 1420 M Sites maintained 3 month season of use	268 M acres would be visually impacted and reduced to 196 M acres by the end of the planning horizon	PNV = \$4.037 MM Estimated returns to Treasury = \$49.3 MM jobs created = 3120	Current budget FY85 of \$3.49 MM would have to be increased to \$6.19 MM to implement this alternative
6a	Harv L-8.4 H-8.4 MMBF Tentative suitable acres 128,020 Long term sustained yield = 11.0 MMBF	New sites developed Wildlife RVD's 461 M Other RVD's 1433 M Sites maintained 3 month season of use	265 M acres would be visually impacted and reduced to 196 M acres by the end of the planning horizon	PNV = \$4.000 MM Estimated returns to Treasury = \$48.9 MM jobs created = 3168	Current budget FY85 of \$3.49 MM would have to be increased to \$6.78 MM to implement this alternative
6b	Harv L-6.6 H-7.2 MMBF Tentative suitable acres 105,250 Long term sustained yield = 9.0 MMBF	One new developed site Wildlife RVD's 456 M Other RVD's 1228 M Sites maintained 3 month season of use	263 M acres would be visually impacted and reduced to 194 M acres by the end of the planning horizon	PNV = \$3.968 MM Estimated returns to Treasury = \$48.9 MM jobs created = 2994	Current budget FY85 of \$3.49 MM would have to be increased to \$6.38 MM to implement this alternative
7	Harv L-6.0 H-13.2 MMBF Tentative suitable acres 132,510 Long term sustained yield = 11.4 MMBF	One new developed site Wildlife RVD's 414 M Other RVD's 1424 M Sites maintained 3 month season of use	271 M acres would be visually impacted and reduced to 201 M acres by the end of the planning horizon	PNV = \$4.085 MM Estimated returns to Treasury = \$50.0 MM jobs created = 3186	Current budget FY85 of \$3.49 MM would have to be increased to \$6.38 MM to implement this alternative
7a	Harv L-6.0 H-11.2 MMBF Tentative suitable acres 116,400 Long term sustained yield = 10.1 MMBF	One new developed site Wildlife RVD's 414 M Other RVD's 1337 M Sites maintained 3 month season of use	266 M acres would be visually impacted and reduced to 197 M acres by the end of the planning horizon	PNV = \$4.060 MM Estimated returns to Treasury = \$49.9 MM jobs created = 3094	Current budget FY85 of \$3.49 MM would have to be increased to \$6.18 MM to implement this alternative
7b	Harv L-6.0 H-10.5 MMBF Tentative suitable acres 106,480 Long term sustained yield = 9.1 MMBF	One new developed site Wildlife RVD's 413 M Other RVD's 1335 M Sites maintained 3 month season of use	259 M acres would be visually impacted and reduced to 191 M acres by the end of the planning horizon	PNV = \$3.946 MM Estimated returns to Treasury = \$48.5 MM jobs created = 2980	Current budget FY85 of \$3.49 MM would have to be increased to \$6.18 MM to implement this alternative
8	Harv L-3.2 H-4.0 MMBF Tentative suitable acres 31,130 Long term sustained 3 month season reduced	No new developed sites Wildlife RVD's 413 M Other RVD's 1070 M No site maintenance planning horizon	145 M acres would be visually impacted and reduced to 100 M acres by the end of the	PNV = \$2.220 MM Estimated returns to Treasury = \$26.8 MM jobs created = 725	Budget FY86 of 3.49 MM to implement this increased to 3.61 alternative yield = 2.5 MMBF
9	Harv L-2.9 H-8.0 MMBF Tentative suitable acres 85,070 Long term sustained yield = 7.4 MMBF	Same as Alternative 6 Wildlife RVD's 475 M Other RVD's 1419 M	269 M acres would be visually impacted and reduced to 197 M acres by the end of the planning horizon	PNV = \$4.042 MM Estimated returns to Treasury = \$49.3 MM jobs created = 3105	Current budget FY85 of \$3.49 MM would have to be increased to \$6.09 MM to implement this alternative
10	Harv L-3.0 H-3.0 MMBF tentative suitable acres 72,360 Long term sustained yield = 6.4 MMBF	New sites developed Wildlife RVD's 518 M Other RVD's 1321 M Sites maintained 3 month season of use	261 M acres would be visually impacted and reduced to 183 M acres by the end of the planning horizon	PNV = \$3.806 MM Estimated returns to Treasury = \$46.5 MM jobs created = 2772	Current budget FY85 of \$3.49 MM would have to be increased to \$5.83 MM to implement this alternative

Concerns

6. Certain timber volumes from the forested Districts are needed to ensure a reasonable flow to the industry and for the enhancement of range and wildlife habitat.
7. Recreation opportunity needs to be evaluated across the Forest. Many rural areas depend nearly entirely upon Forest Service facilities and National Forest System lands for public use. Conversely, recreation facilities and public lands near the metropolitan areas are also integral in total public recreation opportunity.
8. The scenic beauty of the lands under the Custer National Forest's management is an important management concern. Existing Visual Condition is used to monitor the upper limits of negative disturbance to the landscape. It is the goal of any management theme to maintain the natural character and beauty of the land as a response to public expectations and administrative policy.
9. The assessment of the total Public Net Benefit is vital to the selection of the Preferred Alternative. This value includes all returns to society from the Forest, including commodity and noncommodity goods and services, employment, and social programs.
10. The required budgets for each alternative in comparison to realistic expectations of Congressional actions are probably most critical to the success of the Preferred Alternative.

TABLE B-17
DISCOUNTED COSTS, BENEFITS AND PRESENT NET
VALUE BY ALTERNATIVE (4%)
MM \$'s

Alternative	COSTS		BENEFITS		PNV	
	MM\$	Change	MM\$	Change	MM\$	Change
8	106	59	2327	1600	2220	1586
10	165	6	3972	-160	3806	-165
1	171	2	3812	398	3641	396
6	173	2	4210	7	4037	5
9	175	2	4217	-39	4042	-41
5	175	1	4178	-202	4001	-203
4	178	0	3976	170	3798	170
6b	178	2	4146	154	3968	152
3	180	1	4300	-18	4120	-20
2	181	2	4282	-139	4100	-141
5c	183	1	4143	-13	3959	-13
7b	184	2	4130	116	3946	114
7a	186	1	4246	-50	4060	-51
6a	187	1	4196	-98	4009	-89
5a	188	4	4098	179	3920	165
7	192	0	4277	-145	4085	-145
5b	192		4132		3940	

is the change in land designation needed to meet the constraints. This strongly indicates a need to change management direction in order to be more cost efficient in producing current levels of goods and services under current funding levels. The change in designation from Benchmark CUT reduced current management to 40 percent of its former level. Some 179 M acres of this change are designated to a given resources. Alternative 8 (Current Management), therefore, will reflect the current level of management in which comparisons will be made, because it best reflects the current levels of resources outputs and current funding levels. Table B-19 displays the land use designations by alternative and by management

emphasis. Table B-20 displays the outputs and effects of the alternatives (located at the end of this Appendix).

Cost to benefit comparisons have limitations due to the problems of joint cost and nonseparable costs. Therefore, cost and benefit comparisons are made in the following discussion and are only valid as they relate to the benefits and costs of a decision variable.

a. Alternative 1

Alternative 1 provides for the protection and emphasis of wildlife habitat and roadless areas. It was determined that wildlife habitat protection and development were a primary concern in this alternative. By using a deer index value of 1635 M effective acres for the first period and increasing it to 2125 M effective acres by the last time period, the habitat and potential capacity for most wildlife species were optimized. These became a value the alternative had to meet. Roadless and wilderness areas are considered next in importance. Desired acres for roadless areas are set by areas at 280,882 acres. The only required wilderness was the Absaroka-Beartooth Wilderness. Subsequent analysis made it necessary to lessen the roadless acres to 123,027 acres in order to meet the wildlife constraints. Other resource outputs and responses are left unconstrained. Commodity values are not emphasized, but produced in response to these other resource needs.

Grazing levels decreased from 862,000 to 721,000 AUM's over the course of 20 years. This is not likely to be in coordination with existing allotment plans and expectations of those people who run livestock on the Forest. This level, however, does

TABLE B-18
DISCOUNTED BENEFITS AND COST FOR RESOURCE GROUPS BY ALTERNATIVE (4%)
(MM\$'s)

Alt.	PNV	Discounted Benefits					Discounted Costs					
		Range	Minerals	Recreation	Wildlife	Timber	Range	Minerals	Recreation	Wildlife	Timber	Other
3	4120	271	3718	98	205	8.0	49.0	6.1	15.2	8.0	14.9	87.0
2	4100	287	3715	96	178	5.7	53.6	6.0	13.9	6.7	14.0	87.2
7	4085	288	3711	96	174	7.7	57.9	6.0	14.9	6.6	18.8	87.7
7a	4060	288	3686	90	174	7.5	57.2	6.0	13.8	6.5	15.4	86.7
9	4042	275	3673	97	195	6.6	50.0	5.9	13.8	7.6	10.5	87.1
6	4037	275	3639	97	195	3.8	49.8	5.9	13.1	7.6	9.9	86.8
6a	4009	280	3622	97	190	7.6	51.3	5.9	15.0	7.3	20.5	87.3
5	4001	277	3604	99	191	6.5	50.3	5.8	14.0	7.4	12.1	87.5
6b	3968	280	3587	84	188	7.2	51.5	5.7	12.4	7.0	15.2	86.2
5c	3959	277	3569	100	191	6.4	50.3	5.8	16.0	7.4	15.9	87.9
7b	3946	288	3571	91	173	7.4	57.6	5.8	13.7	6.4	14.3	86.6
5b	3940	277	3560	100	190	6.2	50.1	5.8	18.3	8.1	15.8	93.5
5a	3920	271	3524	101	189	7.3	49.7	5.8	17.9	8.0	14.0	92.5
10	3806	264	3404	92	208	3.3	48.6	5.4	11.4	7.8	6.1	85.7
4	3798	271	3402	93	203	6.9	48.9	5.6	15.9	8.3	11.0	88.5
1	3641	230	3246	87	246	3.1	39.5	5.0	15.3	11.4	9.0	91.0
8	2220	258	1818	76	170	3.9	35.9	2.3	2.0	1.7	7.7	56.8
PNV	4249	271	3857	97	190	8.2	49.2	6.5	14.7	7.4	10.3	86.7

The "Other" category contains costs that could not be split out and assigned to a specific resource. The presence of such "joint" costs makes direct comparisons of individual resource benefits and costs misleading.

TABLE B-19
LAND DESIGNATION BY MANAGEMENT EMPHASIS FOR ALTERNATIVES
 (Thousand Acres)

ALT	Range	Current	ModLvl	Minerals	Timber	Rec.	Wildlife	Wildner	MinLvl
1	6.420	15.590	229.672	279.845	7.057	.074	1332.948	471.249	107.772
2	626.636	264.255	191.828	773.018	17.985	51.430	124.563	341.737	59.175
3	15.178	497.186	235.352	837.093	34.635	53.127	373.448	341.737	62.871
4	7.256	474.804	136.564	816.203	7.903	17.049	327.048	596.319	67.480
5	7.256	753.964	199.252	841.036	13.304	49.575	162.770	356.426	86.043
5a	10.916	646.827	141.251	856.137	27.001	13.976	115.422	550.000	71.097
5b	7.256	729.581	150.808	851.491	13.148	37.496	145.531	446.241	69.079
5c	7.256	733.309	179.108	841.220	17.687	55.604	160.877	380.566	75.001
6	23.561	692.467	148.890	835.153	7.074	39.930	268.508	351.422	83.621
6a	88.976	656.698	180.163	841.352	41.149	54.297	178.571	375.032	34.388
6b	89.594	659.955	181.120	849.708	36.163	18.255	138.384	447.250	30.228
7	661.002	256.687	192.619	733.344	42.198	62.964	121.267	356.984	23.562
7a	649.016	260.205	173.453	745.381	33.803	52.838	113.986	392.509	29.345
7b	641.984	257.364	157.769	740.593	40.170	43.118	90.421	440.177	39.030
8	12.216	432.462	327.141	79.289	13.978	2.449	9.580	410.137	1163.374
9	24.492	706.562	148.553	832.966	9.461	36.909	267.688	351.422	72.573
10	110.633	656.104	506.246	297.498	17.190	21.449	359.071	362.510	119.925
	PNV	235.395	137.022	1364.323	11.433	32.768	258.631	341.737	79.318

provide the greatest opportunity to manage the wildlife habitat.

Oil production is considerably lower under this alternative than any other. Roadless area constraints limit access, and wildlife management further limits production activity.

This alternative provides the optimum opportunity for wildlife management. It protects the woody draws/riparian areas more than any other alternative because of the needs of the wildlife habitat and the designation to roadless management at about 246,000 acres.

Access is not increased in this alternative, and, in fact, opportunity for motorized access is decreased in the areas that are designated to roadless.

Given the objective of this alternative, as much area was designated to roadless as possible. This alternative explores this idea of a long-range need for areas in a low development concept. The roadless areas will be managed for riding and hiking areas, and maintenance of open-space character.

Out of the available acres for roadless management, 48 percent are kept in roadless management. In addition to the Absaroka-Beartooth Wilderness, 129,037 acres are added to the wilderness system.

The foregone economic benefits of implementing Alternative 1 in comparison to Benchmark Maximum PNV is \$608 MM. This reflects a foregone benefits of \$31.3 MM in the Range program, a \$609.5 MM in the Mineral program, a \$10.6 MM in the Recreation program, and a \$3.8 MM in the Timber program for this alternative. Constraints used that created these foregone economic benefits were: emphasis on control on roadless and wilderness areas, meeting a given level of deer affective acres and setting sequential bound

on timber harvest at an increase of 20 percent and a allowable decrease of 10 percent.

In comparison to Benchmark Maximum PNV the discounted costs are 2 percent lower and the benefits are 14 percent lower. The increased costs are attributed to the necessary wildlife and recreation programs needed to carry out the objectives of the alternative in response to ICO 3 and ICO 7. While the mineral and range programs decrease, they did not drop enough to compensate for the increased costs of the wildlife and timber programs. The recreation programs are about the same. Benefits are lower in all resources except wildlife, which increased some \$56 MM. The largest drop in benefits occurred within the mineral program which decreased by \$56 MM. This was largely a result of more acres going into a roadless and wilderness designation in response to ICO 5. The total market values decreased by 16 percent.

The range program was reduced by 9 percent from Benchmark Maximum PNV in the first period (5 years) and to 20 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 4 percent drop in the first period and an 13 percent drop by the end of the planning horizon. Oil production was restricted due to roadless and wilderness designation. Total production was some 49 MM barrels less compared to Benchmark Maximum PNV and was 135 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first one and a half decades where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon decreased the program costs by over \$1.3 MM, while the benefits decreased \$5.1 MM. The reduced timber program in Alternative 8 (Current Management) increased the benefits by \$7.7 MM over the planning period. Recreation/

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 1	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 10(PA)	Next Highest PNV Altern. 4
PNV	3641	4249	2220	3906	3798
Benefits					
Range	230	271	258	264	271
Minerals	3246	3857	1818	3404	3402
Rec.	87	97	76	92	93
Wildlife	246	190	170	208	203
Timber	3.1	8.2	3.9	3.3	6.9
Costs					
Range	39.5	49.2	35.9	48.6	48.9
Minerals	5.0	6.5	2.3	5.4	5.6
Rec.	15.3	14.7	2.0	11.4	15.9
Wildlife	11.4	7.4	1.7	7.8	8.3
Timber	9.0	10.3	7.7	6.1	11.0
Other\$	91.0	86.7	56.8	85.7	88.5

wildlife use was decreased by 10 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 4 percent greater. Most of the increase was due to wildlife related recreation.

Alternative 10(PA) is the closest in total discounted cost and is just \$6 MM less. All resources with the exception of wildlife recreation related outputs are lower than Alternative 10(PA). Cost, on the other hand, exceeds Alternative 10(PA) in recreation, wildlife and timber programs. All other costs are lower. The biggest difference in cost is in the range program, which is \$9 MM less than Alternative 10(PA). The mineral program costs in Alternative 10(PA) are about the same. Alternative 1 exceeds Alternative 10(PA) by \$3.6 MM in the wildlife and \$2.9 MM in the timber program. The increase in cost and constraints had a \$265 MM dollar impact on the present net value.

Alternative 4 is somewhat higher in terms of present net value. It exceeds Alternative 1 in all resource values except wildlife. The difference in total benefits is \$157 MM, of which \$156 MM are related to oil production. Wildlife is up by \$43 MM, while range is down by \$41 MM. The cost of Alternative 4 exceeds Alternative 1 by \$7 MM, while the present net value of Alternative 4 is \$157 MM greater. Thus for each additional dollar spent to develop Alternative 4 above Alternative 1, a \$22 benefit would be realized.

Land designation for Alternative 1 is 54 percent wildlife emphasis. Wilderness was next with 19 percent of the land designation, in comparison to Benchmark Maximum PNV, where 11 percent was designated to wildlife and 14 percent to wilderness. In the Benchmark Maximum PNV, 55 percent of the land was designated to a mineral emphasis. In Alternative 8 (Current Management), land designation was less than 1 percent to wildlife and 17 percent to wilderness. The main designation for Alternative 8 (Current Management) was minimum management level (48 per-

cent). Land designation in Alternative 10(PA) was 12 percent to a mineral emphasis compared to 11 percent in Alternative 1, and only 15 percent to wildlife compared to the 54 percent in Alternative 1. Alternative 4 had 13 percent and 24 percent designated to wildlife and wilderness respectively.

Designation of the Forest land base to 54 percent wildlife and 19 percent wilderness emphasis is less efficient use of the land than in other types of emphasis. This type of designation mix significantly reduces the benefits from the market commodities, dropping the benefits from \$4424 MM to \$3812 MM, while the change in cost was a difference of \$4 MM, although certain areas within the Forest are best designated to a wildlife emphasis as indicated by the 11 percent wildlife designation in Benchmark Maximum PNV. However, the designation in Alternative 1 may be justified by the increased nonmarket resources benefits such as roadless and wilderness, deer and elk populations, increases in grouse habitat and reduction in EVC-4 acres.

b. Alternative 2 (RPA)

This alternative is designed to meet the direction in the "Revised President's Statement of Policy" which states that "at least one alternative in the DEIS will be developed to determine how the 1980 Forest and Rangeland Renewable Resources Planning Act (RPA) program could best be implemented on the Forest." The Forest's projected program outputs, activities, and costs are assigned through the Northern Region Guide in response to National demand. As such, the Custer National Forest explored the production compatibility among resources with RPA projections in timber, minerals, range, and recreation.

The grazing level in this alternative exceeds the existing level in all periods ranging from 902,683 AUM's the first period to 972,493 AUM's in the last. This level is expected to meet and exceed the local demands for the planning horizon. However,

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 2	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Lease Cost Altern. 3	Next Highest PNV Altern. 3
PNV	4100	4249	2220	4120	4120
Benefits					
Range	287	271	258	271	271
Minerals	3715	3857	1818	3718	3718
Rec.	96	97	76	98	98
Wildlife	178	190	170	205	205
Timber	5.7	8.2	3.9	8.0	8.0
Costs					
Range	53.6	49.2	35.9	49.0	49.0
Minerals	6.0	6.5	2.3	6.1	6.1
Rec.	13.9	14.7	2.0	15.2	15.2
Wildlife	6.7	7.4	1.7	8.0	8.0
Timber	14.0	10.3	7.7	14.9	14.9
Other\$	87.2	86.7	56.8	87.0	87.2

the level of AUM assignment from RPA cannot be met after the year 2020.

This alternative produces one of the highest levels of oil.

Grouse index and the visual condition of the land are negatively affected. Wildlife habitat and woody draws are not specifically protected or enhanced. In efforts to meet the RPA assignments, woody draws and riparian areas will receive limited protection. Laws and policies regarding these areas will be followed, but the intent will be to manage the lands for the projected assignments.

Due to the development needed to meet RPA assignments, greater access will be provided. This means that more roads will be built to and within the Forest. This alternative does not recognize any long-term need for low development areas, except for the existing Absaroka-Beartooth Wilderness and the Lost Water Canyon Roadless Area.

Out of the 258,280 acres in roadless condition, only 9,800 acres (4 percent) are kept in roadless management. The Absaroka-Beartooth Wilderness remains as a Wilderness.

The foregone economic benefits of implementing Alternative 2 (RPA) in comparison to Benchmark Maximum PNV is \$149 MM. This reflects an increased benefit of \$11.6 MM in the Range program, a foregone benefits of \$141 MM in the Mineral program, \$11.3 in the Wildlife program, and \$6.2 MM in the Timber program for this alternative. Constraints used that created these foregone economic benefits were a result of RPA projection and Regional assignment to the Forest through the Regional Plan.

In comparison to Benchmark Maximum PNV, the discounted costs are 3 percent higher while the benefits are 3 percent lower. The increased cost is a result of the increased range and timber programs. The higher costs are attributed to the

necessary increased intensity of management needed to meet the objectives of the RPA assignment. All other program costs are reduced, but not enough to compensate for the increase in the range and timber programs. The recreation programs stayed about the same with a slight decrease in benefits and costs.

Range benefits are greater by \$16 MM but costs increased by \$4.4 MM. The largest decrease in benefits occurred within the mineral program which decreased by \$142 MM. This alternative was not designed to meet any specific ICO. However, by attempting to achieve the RPA assignments, several of the ICO's are met. The total market values decreased by 3 percent.

The range program increased by 1 percent over Benchmark Maximum PNV in the first period (5 years) and 8 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which was less than one percent in the first period and an increase of 17 percent less by the end of the planning horizon. Oil production was reduced due to the greater number of acres going to range emphasis designation. This reduced the total production by 5 MM barrels over the planning horizon, in comparison to Benchmark Maximum PNV, and was 178.1 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs by \$4 MM while the benefits decreased \$2.5 MM. The reduced timber program in Alternative 8 (Current Management) showed benefits of \$1.8 MM less over the planning period. Recreation/wildlife use was decreased by 2 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was almost equal.

Alternative 3 is the closest in total discounted cost, and was only \$1 MM less. All resources with the exception of Range outputs are lower than

Alternative 3. Cost exceeds Alternative 3 only in the range program. The biggest difference in cost is in the range program, which is \$4.6 MM greater than Alternative 3. The \$1 MM increase in costs and constraints had a \$20 MM dollar negative impact on the present net value.

Alternative 3 is also next highest in terms of present net value. Thus for each additional dollar spent to develop Alternative 2 (RPA) above Alternative 3, a \$20 decrease in benefit would be realized.

Land designation for Alternative 2 (RPA) is 32 percent to a mineral emphasis. Range intensity emphasis was next with 26 percent of the land designation, in comparison to Benchmark Maximum PNV where no designation was made to range and 55 percent was designated to a mineral emphasis. Alternative 8 (Current Management) land designation was less than 1 percent to range and 2 percent to wilderness. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 3 was 34 percent to a mineral emphasis compared to 32 percent in Alternative 2 (RPA) and less than 1 percent to range compared the 26 percent in Alternative 2 (RPA).

Designation of the Forest land base to 26 percent range intensity emphasis is less efficient use of the land than in other types of emphasis. This type of designation mix significantly reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$4007 MM, while the change in cost was a difference of \$28 MM to implement Alternative 2 (RPA). To increase market commodities to meet RPA assigned level is costly. RPA levels are achieved by all resources until the year 2020, after which range levels could not be met.

c. Alternative 3

This alternative was developed to determine the optimal present net value of the Forest, given restrictions to meet local District demands for timber and range. Lower levels of timber and AUM production to ensure reasonable distribution of these activities and outputs across the Forest are established. By using maximize present net value objective function, the results of the analysis showed the best way to achieve the alternative theme. Cost efficiency received the highest priority in making decisions about how specific resources should be managed. Goods and services that do not contribute directly to the optimal present net value receive limited emphasis, while existing Federal laws, policies, and regulations ensure that Forest management is within multiple-use guidelines.

Grazing levels are established at 885,000 AUM's, and increased to 890,000 AUM's, staying about the same as existing grazing. This will meet local demands for the planning horizon.

This alternative produces one of the highest levels of oil.

The wildlife indices indicate that habitat effectiveness is not extremely impacted. The bottom ecosystems are generally designated to an intensive market designation. These designations recognize the importance of the woody draws and riparian areas. Protection is usually ensured through preplanning and coordination.

The levels of timber and oil production necessitate greater roading throughout the Forest than what now exists. Therefore, motorized access will be increased. This may or may not meet the access needs for the recreating public.

This alternative does not recognize any long-term need for low development areas, although the

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 3	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 6b	Next Highest PNV Bench.Max.PNV
PNV	4120	4249	2220	3668	4249
Benefits					
Range	271	271	258	280	271
Minerals	3718	3857	1818	3587	3857
Rec.	98	97	76	84	97
Wildlife	205	190	170	188	190
Timber	8.0	8.2	3.9	7.2	8.2
Costs					
Range	49.0	49.2	35.9	51.5	49.2
Minerals	6.1	6.5	2.3	5.7	6.5
Rec.	15.2	14.7	2.0	12.4	14.7
Wildlife	8.0	7.4	1.7	7.0	7.4
Timber	14.9	10.3	7.7	15.2	10.3
Other\$	87.0	86.7	56.8	86.2	86.7

Absaroka-Beartooth Wilderness remains, and a portion of the Tongue River Breaks was considered as roadless.

Out of the 258,280 acres in roadless condition, only 9,800 acres (Lost Water Canyon), about 4 percent of the total, are designated to roadless management.

The foregone economic benefits of implementing Alternative 3 in comparison to Benchmark Maximum PNV is \$130 MM. This reflects a foregone benefit of \$138.6 MM in the Mineral program, and \$14.8 MM in the Timber program for this alternative. Constraints used that created these foregone benefits were: sequential bounds with an upper limit of 20 percent and a lower limit of 10 percent, and harvest floors and AUM floors for the Districts.

In comparison to Benchmark Maximum PNV, the discounted costs are 3 percent higher while the benefits are 3 percent lower. The increased cost is a result of the increased program in recreation, wildlife and timber resources. The higher costs are attributed to the shift in distribution of output for the timber program needed to meet local District demand. This is in response to ICO 1 and 6. The reduced programs did not compensate enough for the increase in the recreation and timber programs and the reduction in benefits occurred mostly in the minerals and timber programs. The recreation and wildlife recreation activities are about \$16 MM higher than Benchmark Maximum PNV. Benefits are lower in timber and minerals exceeding \$139 MM. Recreation related activities increased some 16 MM. The largest drop in benefits occurred within the mineral program, which decreased by \$139 MM. The total market values decreased by 3 percent. Even though the objective of this alternative was not to meet any given ICO, it did meet many through the spacial fitting process. The spacial fitting of this alternative had the greatest impact on the present net value.

The range program remained the same as the Benchmark Maximum PNV in the first period (5 years) and remained at that level by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a less than 1 percent drop in the first period and a 7 percent drop by the end of the planning horizon. Oil production was reduced some 5 MM barrels over the planning horizon and was 178 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs by \$5 MM while the benefits decreased \$124 MM. The timber program in Alternative 8 (Current Management) yielded about half the benefits over the planning period, while the costs are a little more

than half of Alternative 3. Recreation/wildlife use was increased by less than 1 percent in the first period compared to Benchmark Maximum PNV, and by the end of the planning horizon was 6 percent higher.

Alternative 6b is the closest in total discounted cost, at only \$2 MM less. All resources with the exception of range activity were higher than Alternative 6b. Cost, on the other hand, exceeds Alternative 6b only in the range and timber programs. All other resource costs are lower. The biggest difference in cost is in the range program, which is about \$25 MM more than Alternative 6b. Alternative 3 exceeds Alternative 6b by \$2.8 MM in the recreation and \$0.4 MM in the minerals program. The small increase in cost and constraints had a \$452 MM dollar positive impact on the present net value.

Benchmark Maximum PNV is higher in terms of present net value. There are no alternatives with a higher present net value.

Land designation for Alternative 3 is 34 percent mineral emphasis. Current was next with 20 percent of the land designation, in comparison to Benchmark Maximum PNV, where 55 percent was designated to minerals and 10 percent to current. Alternative 8 (Current Management) land designation was slightly over 3 percent to minerals and 18 percent to current. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Alternative 6b had 34 percent and less 27 percent designated to minerals and current respectively.

Designation of the Forest land base to 34 percent minerals and 20 percent current emphasis is an efficient use of the land. This designation mix decreases the benefits of the market commodities, decreasing the benefits from \$4136 MM to \$3997 MM, while the change in cost was an increase of \$4.0 MM. The designation in Alternative 3 represents the optimal land designation needed to meet local demands for timber and range.

d. Alternative 4

This alternative is responsible to the wilderness and recreation possibilities of the Custer National Forest. This alternative was to determine the effects on costs, values, and commodity outputs. Wilderness acres are of prime consideration and producing recreation (RVD's) was secondary. The optimum of each was set as a constraint to meet. All roadless areas, equaling 258,280 acres, plus the Absaroka-Beartooth Wilderness, are restricted to wilderness. The RVD level was set at 835,600 the first period, increasing to 1,620,400 the last period to meet wilderness designations. Production of commodity goods continues, but only in response to these noncommodity outputs.

Grazing levels are produced at a fairly constant

SUMMARY OF EFFECTS

level, 898,000 AUM's, dropping slightly in response to oil production. This is expected to meet the local demand for the planning period.

Wilderness designations preclude oil development and reduced production levels. This alternative indicated some incompatibility of wilderness and oil production.

The wilderness designation protects much of the vital riparian areas and woody draws. Areas not in a wilderness designation are protected through multiple-use coordination.

The opportunity for motorized access is eliminated in areas with wilderness designation. However, nonmotorized access to wilderness areas would be increased. The lack of emphasis on commodity goods results in little additional road- ing needed.

There will be no low development areas in this alternative. All available roadless areas are designated to wilderness.

Out of the 258,280 acres in a roadless condition, 100 percent are designated to wilderness. These are the 23 areas identified as RARE II areas that are still suitable for wilderness designation.

The foregone economic benefits of implementing Alternative 4 in comparison to Benchmark Maximum PNV is \$451 MM. This reflect a foregone benefits of \$454.1 MM in the Mineral program, \$5.2 in the Recreation program, and \$2.8 MM in the Timber program for this alternative. Constraints used that created these foregone benefits were: sequential bounds an upper of 20 percent and a lower of 10 percent, a Forest floor for non-wildlife recreation activities and a wilderness emphasis constraint on all roadless areas.

In comparison to Benchmark Maximum PNV, the discounted costs are 2 percent higher while the benefits are 10 percent lower. The increased cost is a result of the increased cost of all programs except the mineral program. While the mineral

program was reduced it did not drop enough to compensate for the increased costs of other programs. The recreation programs are about \$1.4 MM higher. Benefits are lower in all resources except wildlife and range, which increased some \$13 MM and stay the same respectively. The largest drop in benefits occurred within the mineral program which decreased by 455 MM. This is a result of the constraint to meet ICO 5 and 7 which emphasized recreation and designated more areas to wilderness. The total market values decreased by 12 percent.

The range program increased less than 1 percent from Benchmark Maximum PNV in the first period (5 years), and maintained the same relationship through the planning horizon. This same relationship was evident in Alternative 8 (Current Management) in the first period, but by the end of the planning horizon there was 8 percent increase in Alternative 4. Oil production decreased some 35 MM barrels over the planning horizon from the Benchmark Maximum PNV, and was 148 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs by almost .7 MM while the benefits decreased \$1.3 MM. The reduced timber program in Alternative 8 (Current Management) was less by \$3 MM in timber benefits over the planning period. Recreation/wildlife use was decreased by 4 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was over 1 percent greater. Most of the increase was due to wildlife related recreation.

Alternative 5 is the \$1 M less in total discounted cost. All resources with the exception of wildlife recreation related outputs and timber are lower than Alternative 5. Cost, on the other hand, exceeds Alternative 5 in the wildlife and recrea-

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 4	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 5	Next Highest PNV Altern. 10(PA)
PNV	3798	4249	2220	4001	3806
Benefits					
Range	271	271	258	277	264
Minerals	3402	3857	1818	3604	3404
Rec.	93	97	76	99	92
Wildlife	203	190	170	191	208
Timber	6.9	8.2	3.9	6.5	3.3
Costs					
Range	48.9	49.2	35.9	50.3	48.6
Minerals	5.6	6.5	2.3	5.8	5.4
Rec.	15.9	14.7	2.0	14.0	11.4
Wildlife	8.3	7.4	1.7	7.4	7.8
Timber	11.0	10.3	7.7	12.1	6.1
Other\$	88.5	86.7	56.8	87.5	85.7

tion programs. All other costs are lower. The biggest difference in cost is in the recreation program, which is \$1.9 MM more than Alternative 5. The cost differences in the resources programs and constraints had a \$203 MM dollar impact on the present net value.

Alternative 10(PA) is somewhat higher in terms of present net value. Alternative 4 is exceeded in benefit in range and timber. The difference in total benefits is \$13 MM. Wildlife is down by \$5 MM, while range is up by \$7 MM. The cost of Alternative 4 exceeds Alternative 10(PA) by \$12 MM. The main contributor to the increased cost was the recreation program which is almost 4.5 MM greater, while the present net value of Alternative 10(PA) is \$8 MM greater. Thus for each additional dollar spent to develop Alternative 4 above Alternative 10(PA) an \$8 loss would be realized.

Land designation for Alternative 4 is 24 percent wilderness and less than 1 percent to recreation emphasis. Designation to minerals was 33 percent and 19 percent to current, in comparison to Benchmark Maximum PNV where 14 percent was designated to wilderness, 55 percent to minerals, 1 percent recreation and 10 percent to current. Alternative 8 (Current Management) land designation was 3 percent to minerals and 13 percent and 17 percent to current and wilderness, respectively. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 5 was 34 percent to a mineral emphasis compared to 33 percent in Alternative 4, and only 7 percent to wildlife compared to the 14 percent in Alternative 4. Alternative 10(PA) had 12 percent designated to minerals, with 15 percent designated both to wildlife and wilderness respectively and 27 percent to current management.

Designation of the Forest land base to 24 percent wilderness emphasis is less efficient use of some of these lands than other types of emphasis. This type of designation mix reduced the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3680 MM, while the change in cost was a difference of \$0.5 MM. Certain areas within the Forest may best be designated to a wilderness emphasis. However, the designation in Alternative 4 may be justified by the increased nonmarket resources benefits.

e. Alternative 5

This alternative was developed to implement unit plans that were developed during the period 1974 to 1980 for the Custer National Forest except for the Grand River Ranger District which used a multiple-use plan. These plans provide for the multiple-use management of Forest resources consistent with local and National demands. To formulate this alternative, current resource out-

puts are used as constraint levels to be achieved. The 10-year timber program was defined and certain roadless areas are identified. The significance of commodities goods was recognized and would be balanced against important noncommodity values. Resources are used to strike a balanced resource management program.

The grazing stays at the current level of about 875,000 AUM's a year, with a slight decrease in regard to oil development.

Oil production is at 334 MM barrels. Visual condition is impacted moderately and elk habitat is slightly reduced. Other renewable resources appear to be well maintained. The compatibility of most of these resources seems to be moderately high.

Wildlife habitat protection and coordination stays about the same as the existing conditions.

The greater timber volumes from the existing program will necessitate greater roading. Many of the existing roadless areas are available for development, and through time these areas will be roaded.

Of the 258,280 acres in roadless condition, 55 percent (89,153 acres) are designated to roadless management. Another 16,600 acres, or 6 percent, are designated to wilderness, making a total of 356,441 wilderness acres, which includes the Absaroka-Beartooth Wilderness.

The foregone economic benefits of implementing Alternative 5 in comparison to Benchmark Maximum PNV is \$249 MM. This reflects a foregone benefits of \$252.3 MM in the Mineral program and \$3.5 MM in the Timber program for this alternative. Constraints used that created these foregone economic benefits were: timber constraints of nondeclining yield, ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, nonwildlife related recreation floor for the Forest, and a budget ceiling for the Forest.

In comparison to Benchmark Maximum PNV, the discounted costs are 1 percent higher while the benefits are 6 percent lower. The increased cost is mostly a result of the increased range and timber program. The higher costs are attributed to the more intensified programs needed to meet objectives in response to ICO 1. While the mineral and recreation programs are reduced, they did not compensate for the range and timber programs. Benefits are lower in the minerals and timber programs, while the range and recreation benefits increased a total of \$8 MM. The major drop in benefits occurred within the mineral program, which decreased by \$253 MM. This was a result of less acres going into a minerals designation in order to meet other objective directed at ICO 6 and 7. The total market values decreased by 6 percent.

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 5	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 9	Next Highest PNV Altern. 6a
PNV	4001	4249	2220	4042	4009
Benefits					
Range	277	271	258	275	280
Minerals	3604	3857	1818	3673	3622
Rec.	99	97	76	97	97
Wildlife	191	190	170	195	190
Timber	6.5	8.2	3.9	6.6	7.6
Costs					
Range	50.3	49.2	35.9	50.0	51.3
Minerals	5.8	6.5	2.3	5.9	5.9
Rec.	14.0	14.7	2.0	13.8	15.0
Wildlife	7.4	7.4	1.7	7.6	7.3
Timber	12.1	10.3	7.7	10.5	20.5
Other\$	87.5	86.7	56.8	87.1	87.3

The range program was increased by 1 percent from Benchmark Maximum PNV in the first period (5 years) and to 2 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a decrease by 1 percent in the first period and 8 percent by the end of the planning horizon. Oil production decreased some 16 MM barrels compared to Benchmark Maximum PNV, and was 168 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs while the benefits decreased \$1.7 MM. The reduced timber program in Alternative 8 (Current Management) decreased the benefits by \$2.6 MM over the planning period. Recreation/wildlife use was increased by 3 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 4 percent greater.

Alternative 9 is the equal in total discounted cost. Range and recreation values are lower than Alternative 9. Costs were generally lower in Alternative 9 with the exception of minerals and timber program. Even though the costs were the same the difference in constraints had a \$41 MM dollar negative impact on the present net value.

Alternative 6a is somewhat higher in terms of present net value. It exceeds Alternative 5 in most resource values except wildlife and recreation. The difference in total benefits is \$8 MM. Range is down by \$3 MM, while mineral is down by \$18 MM. The cost of Alternative 6a exceeds Alternative 5 by \$10 MM while the present net value of Alternative 6a is \$18 MM greater. Thus for each additional dollar spent to develop Alternative 6a above Alternative 5, a \$1.80 benefit would be realized.

Land designation for Alternative 5 is 34 percent minerals emphasis. Current management emphasis was next with 31 percent of the land

designation, in comparison to Benchmark Maximum PNV where 55 percent was designated to minerals and 10 percent to current. Alternative 8 (Current Management) land designation was 3 percent to minerals and 18 percent to current. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 9 (Departure from Proposed Action) was 34 percent to a mineral emphasis compared to the 34 percent in Alternative 5, and only 29 percent to current compared to the 31 percent in Alternative 5.

Designation of the Forest land base to 34 percent minerals and 31 percent current emphasis is an efficient use of the land. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3888 MM, while the change in cost was a difference of \$22 MM more than Benchmark Maximum PNV. The designation in Alternative 5 may be justified by the increased nonmarket resources benefits.

f. Alternative 5a

The development of this alternative was the same as Alternative 5, except that approximately an additional 147,976 acres of roadless areas (in addition to the 339,841 acres in the Absaroka-Beartooth Wilderness) are constrained to emphasize wilderness. The same constraints for Alternative 5 for current resource outputs are also used. As a result, intensive management practices and resource coordination becomes necessary to meet all of the constraints. The National demand for commodity products such as timber, oil and gas, and livestock grazing will continue to play an important role in local economies.

The grazing stays at current level, about 875,000 AUM's a year, with a slight decrease in regard to oil development. The additional wilderness does not appear to restrict the available forage for livestock grazing.

Oil production was slightly reduced from Alternative 5 (about 8.5 million barrels). Because of the additional wilderness and the resultant management restrictions on oil development, the greatest impact from this alternative may be a greater production cost to the oil industry. The other renewable resources responded the same as Alternative 5. A noticeable change was the lessened impact to the visual condition of the landscape.

While vegetative and structural improvement manipulation will not be possible in wilderness, the reduced traffic and other management activities tend to favor wildlife values.

The opportunity for motorized access is reduced by this alternative. The areas that are designated to wilderness are previously roadless; therefore, no reduction in access occurs. The greater timber harvest (from existing program) will necessitate additional roading, and access will be created by these developments.

The wilderness designation increases to a total of 387,817 acres. Existing low development areas not designated to wilderness classification are available for resource development.

Of the 258,280 acres in roadless condition, about 155,000 acres (58 percent) are designated to wilderness.

The foregone economic benefits of implementing Alternative 5a in comparison to Benchmark Maximum PNV is \$339 MM. This reflects a foregone benefits of \$332.6 MM in the Mineral program, \$1.6 in the Wildlife program and \$4.6 MM in the Timber program for this alternative. Constraints used that created these foregone economic benefits were: timber constraints of nondeclining yield, ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, nonwildlife related recreation floor for the Forest, a budget ceiling for the Forest, and an addition of 200 M acres to be managed under a roadless and/or wilderness emphasis.

In comparison to Benchmark Maximum PNV, the discounted costs are 7 percent higher while the benefits are 7 percent lower. Costs are higher for all resource programs except minerals. Benefits are lower in all resources except range and recreation. The largest drop in benefits occurred within the mineral program, which decreased by \$383 MM. This was largely a result of more acres going into a roadless and wilderness designation in response to ICO 5. The total market values decreased by 8 percent.

The range program increased by 1 percent from Benchmark Maximum PNV in the first period (5 years) and by 2 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management) which showed a 1 percent decline in the first period and a 10 percent decline by the end of the planning horizon. Oil production became restricted due to roadless and wilderness designation and was some 25 MM barrels below Benchmark Maximum PNV and 159 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs by \$3.7 MM, while the benefits decreased by \$0.9 MM. Alternative 8 (Current Management) had a reduced timber program which was 3.4 MM less the planning period. The Alternative 5a recreation/wildlife use was increased by 2 percent in the first period compared to Benchmark Maximum PNV, and by the end of the planning horizon was 5 percent greater.

Alternative 6a is the closest in total discounted cost, and is just \$1 MM less. All resources with the exception of wildlife recreation related outputs are lower than Alternative 6a. Cost, on the other hand, exceeds Alternative 6a in the recreation and wildlife programs. The small increase in cost and constraints had a \$99 MM dollar negative impact on the present net value.

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 5a	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 6a	Next Highest PNV Altern. 5b
PNV	3910	4249	2220	4009	3940
Benefits					
Range	277	271	258	280	277
Minerals	3524	3857	1818	3622	3560
Rec.	101	97	76	97	100
Wildlife	189	190	170	190	190
Timber	7.3	8.2	3.9	7.6	6.2
Costs					
Range	49.7	49.2	35.9	51.3	50.1
Minerals	5.8	6.5	2.3	5.9	5.8
Rec.	17.9	14.7	2.0	15.0	18.3
Wildlife	8.0	7.4	1.7	7.3	8.1
Timber	14.0	10.3	7.7	20.5	15.8
Other\$	92.5	86.7	56.8	87.3	93.5

Alternative 5b is somewhat higher in terms of present net value. It exceeds Alternative 5a in wildlife and minerals resource values. The difference in total benefits is \$37 MM, of which \$36 MM is largely related to oil production. Wildlife and timber are up by \$2.1 MM, while range is the same. The cost of Alternative 5b exceeds Alternative 5a by \$4 MM, while the present net value of Alternative 5b is \$30 MM greater. Thus for each additional dollar spent to develop Alternative 5b above Alternative 5a, a \$7.50 benefit would be realized.

Alternative 5a in comparison to Alternative 5 showed a reduction in the present net value of \$80 MM. The contributors to this reduction are minerals \$80 MM and wildlife \$2 MM. The range and recreation programs stayed the same while the timber program value increased. Cost on the other hand increased over Alternative 5, except for minerals which stayed the same. Total cost increased by \$11 MM. The major change in land designation was an increase in wilderness emphasis by 8 percent.

Land designation for Alternative 5a is 35 percent mineral emphasis. Current management was next with 27 percent and wilderness with 23 percent of the land designation, in comparison to Benchmark Maximum PNV where 55 percent was designated to minerals, 10 percent to current and 14 percent to wilderness. Alternative 8 (Current Management) land designation was 3 percent to minerals, less than 18 percent to current and 17 percent to wilderness. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 6a was 34 percent to a minerals emphasis compared to the 35 percent in Alternative 5a and only 27 percent to current compared to the 27 percent in Alternative 5a. Alternative 5b had 35 percent and 20 percent designated to minerals and current, respectively.

Designation of the Forest land base to meet the intent of this alternative may be less efficient use of the land than in other types of emphasis. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3808 MM, while the change in cost was a difference of \$3.5 MM. However, the designation in Alternative 5a may be justified by the increased nonmarket resources benefits.

g. Alternative 5b

The formulation of this alternative was the same as Alternative 5 in regard to current resource outputs. The lower level of new wilderness was set at approximately 93,000 acres in specific areas (in addition to the Absaroka-Beartooth Wilderness) and the level of roadless was set at about 39,000 acres.

The purpose here again was to investigate the change in designations, management intensity,

and resource outputs by reducing acres going to wilderness and increasing the acres of roadless designation from levels in Alternative 5.

The grazing stays at current level, about 875,000 AUM's a year, with a slight decrease in response to oil development.

Oil production is further reduced in this alternative from Alternative 5. The restrictions on oil production by wilderness and roadless classification is responsible for the drop in production.

While roadless and wilderness classification protects many acres of habitat, management is intensified on the remaining acres to achieve the other resource outputs in range and timber. This intensification tends to impact habitat and a decrease occurs. The woody draws and riparian areas will be protected in the roadless/wilderness areas, and will likely be affected by the management activities outside these areas.

Motorized access is eliminated in the classified areas, but by maintaining a 7 MMBF harvest, new roads will be built, creating additional access.

This alternative recognizes a long-term need for low development areas by designating 56,000 acres to roadless management. In addition to the Absaroka-Beartooth Wilderness, 106,000 acres are designated to wilderness making total wilderness nearly 446,000 acres.

Of the 258,280 acres in roadless condition, 22 percent are kept in roadless management. Another 41 percent of these suitable lands are designated to wilderness.

The foregone economic benefits of implementing Alternative 5b in comparison to Benchmark Maximum PNV is \$309 MM. This reflects a foregone benefit of \$296 MM in the Mineral program, and a \$0.7 MM in the Wildlife program for this alternative. Constraints used that created these foregone economic benefits were: timber constraints of nondeclining yield, ten year timber program and harvest floors and ceilings for the Forest and the Districts, Forest and District floors and ceiling for AUM's, nonwildlife related recreation floor for the Forest, and a budget ceiling for the Forest.

In comparison to Benchmark Maximum PNV, the discounted costs are 10 percent higher while the benefits are 7 percent lower. The increased cost is a result of the increased range and recreation programs. The higher costs are attributed to a more intensive range program needed to meet the objectives. Costs are greater for most programs except mineral which decreased by \$0.7 MM. Benefits are lower in all resources except range and recreation, which increased \$6 MM and 3 MM, respectively. The major drop in benefits occurred within the mineral and timber program, which decreased by \$299 MM. This was largely a result of more oil producing acres going into a roadless and wilderness designation in response to ICO 5.

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 5b	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 7	Next Highest PNV Altern. 7b
PNV	3940	4249	2220	4085	3946
Benefits					
Range	277	271	258	288	288
Minerals	3560	3857	1818	3711	3571
Rec.	100	97	76	96	91
Wildlife	190	190	170	174	173
Timber	6.2	8.2	3.9	7.7	7.4
Costs					
Range	50.1	49.2	35.9	57.9	57.6
Minerals	5.8	6.5	2.3	6.0	5.8
Rec.	18.3	14.7	2.0	14.9	13.7
Wildlife	8.1	7.4	1.7	6.6	6.4
Timber	15.8	10.3	7.7	18.8	14.3
Other\$	93.5	86.7	56.8	87.7	86.6

The range program was increased by 1 percent from Benchmark Maximum PNV in the first period (5 years) and to 2 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and 10 percent by the end of the planning horizon. Oil production became restricted due to roadless and wilderness designation and was reduced by 20 MM barrels compared to Benchmark Maximum PNV, and was 164 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades where it was not in the Benchmark Maximum PNV. The timber program costs over the planning horizon increased by \$5.5 while the benefits decreased \$2.0 MM. The reduced timber program in Alternative 8 (Current Management) reduced the benefits by \$2.3 MM over the planning period. Recreation/wildlife use was the same in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 4 percent greater.

Alternative 7 has the same total discounted cost. All resources with the exception of recreation and wildlife outputs are lower. Cost exceeds Alternative 5c only in the wildlife and recreation programs. All other costs are lower. The difference in constraints had a \$145 MM dollar negative impact on the present net value.

Alternative 7b is somewhat higher in terms of present net value. It exceeds Alternative 5b in all resource values except wildlife. The difference in total benefits is \$6 MM. The cost of Alternative 5a exceeds Alternative 7b by \$8 MM, while the present net value of Alternative 7b is \$6 MM greater. Thus, for each additional dollar spent to develop Alternative 7b above Alternative 5b a \$0.75 benefit would be realized.

Alternative 5b in comparison to Alternative 5 showed a reduction in the present net value of \$36 MM. The contributors to this reduction are minerals \$35 MM. The timber program decreased while

the range program stayed the same. Costs increased for recreation program, while decreasing for the other programs. Total costs increased by \$6 MM. The major changes in land designation are 73 MM acres out of a current and moderate level emphasis and 25 percent increase in wilderness emphasis.

Land designation for Alternative 5b is 30 percent current emphasis and 35 percent minerals, in comparison to Benchmark Maximum PNV where 10 percent was designated to current and 55 percent to minerals. Alternative 8 (Current Management) land designation was 18 percent to current and 3 percent to minerals. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 7 was 11 percent to current and 30 percent to minerals emphasis, compared to the 30 percent in current and 30 percent in mineral emphasis for Alternative 5b. Alternative 7b had 10 percent and 30 percent designated to current and minerals, respectively.

Designation of the Forest land base to meet the intent of this alternative may be less efficient use of the land than in other types of emphasis. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3843 MM, while the change in cost was a difference of \$5.7 MM more. However, the designation in Alternative 5b may be justified by the increased nonmarket resources benefits.

h. Alternative 5c

The formulation of this Alternative 5c was the same as Alternative 5 in regard to current resource output. The lower level of roadless designation was set at 76,000 acres and the lower level of wilderness was set at 41,000 acres. The purpose was to investigate the change in designation, management intensity, and resource outputs by further reducing the acres in wilderness and increasing the roadless in comparison to Alternative 5b.

The grazing stays at current level, about 875,000 AUM's, with a slight decrease in response to oil development.

Oil production is only slightly less than Alternative 5, higher than Alternative 5a, and about the same as Alternative 5b. The location of the wilderness acres designation, in comparison to Alternative 5b, allows greater development. The additional 26,230 acres to wilderness has only a minor impact on oil development.

Wildlife habitat existing in wilderness area will be protected. Protection and enhancement can be accomplished in the roadless areas. Oil production, timber harvest, and range management intensities on the remaining acres will impact wildlife habitats.

This alternative recognizes a long-term need for low development areas and 91,837 acres are designated to roadless management.

In addition to the Absaroka-Beartooth Wilderness, 26,230 acres are designated to wilderness. Of the 258,280 acres in roadless condition, 91,837 acres (36 percent) are kept in roadless management.

The foregone economic benefits of implementing Alternative 5c in comparison to Benchmark Maximum PNV is \$290 MM. This reflects a foregone benefits of \$287.3 MM in the Mineral program, and a \$7.4 MM in the Timber program for this alternative. Constraints used that created these foregone economic benefits were: timber constraints of nondeclining yield, ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, nonwildlife related recreation floor for the Forest, a budget ceiling for the Forest and an addition of selected areas to be managed under a roadless and/or wilderness emphasis.

In comparison to Benchmark Maximum PNV, the discounted costs are 5 percent higher while the

benefits are 6 percent lower. The increased costs are a result of the range, timber and recreation programs, which increased \$8.0 MM. These increased programs are needed to carry out the objectives of the alternative. The wildlife program costs were the same and the minerals program was less than Benchmark Maximum PNV. Benefits are lower in minerals and timber programs, while range and recreation related activities exceed Alternative 5c by \$10 MM. The largest drop in benefits occurred within the mineral program which decreased by \$290 MM. This was a result of restrictions for areas designated to roadless and wilderness emphasis in response to ICO 5.

The range program was increased by 1 percent from Benchmark Maximum PNV in the first period (5 years) and to 2 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and an 10 percent by the end of the planning horizon. Oil production became restricted due to roadless and wilderness designation and was some 19 MM barrels difference compared to Benchmark Maximum PNV and was 165 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. The timber program costs were \$5.6 MM above Benchmark Maximum PNV. However, the benefits are reduced from \$8.2 MM to \$6.4 MM. The reduced timber program in Alternative 8 (Current Management) decreased the benefits by \$2.5 MM over the planning period. Recreation/wildlife use was increased by 3 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 5 percent greater.

Alternative 2 (RPA) is the next least cost alternative at \$181 MM. Most resources with the exception of range and mineral outputs are lower than Alternative 2 (RPA). Individual resource costs, on

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 5c	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 2	Next Highest PNV Altern. 6b
PNV	3959	4249	2220	4100	3968
Benefits					
Range	277	271	258	287	280
Minerals	3569	3857	1818	3715	3587
Rec.	100	97	76	96	84
Wildlife	191	190	170	178	188
Timber	6.4	8.2	3.9	5.7	7.2
Costs					
Range	50.3	49.2	35.9	53.6	51.5
Minerals	5.8	6.5	2.3	6.0	5.7
Rec.	16.0	14.7	2.0	13.9	12.4
Wildlife	7.4	7.4	1.7	6.7	7.0
Timber	15.9	10.3	7.7	14.0	15.2
Other\$	87.9	86.7	56.8	87.2	86.2

the other hand, exceeded Alternative 2 (RPA) in resources except the range and mineral programs. The recreation and timber cost exceed by \$2.1 MM and \$1.9 MM, respectively. The benefits are greater in Alternative 2 (RPA) for minerals and range, exceeding Alternative 5c for these resources by \$156 MM. The difference in the distribution of the cost and constraints had a \$141 MM dollar impact on the present net value.

Alternative 6b is somewhat higher in terms of present net value. It exceeds Alternative 5c in resource values for range, minerals and timber by \$21.8 MM. The difference in total benefits is \$13 MM, and the majority of the difference is related to oil production. Wildlife is up by \$3 MM, while range is down by \$3 MM. The cost of Alternative 6b exceeds Alternative 5c by \$5 MM, while the present net value of Alternative 6b is \$9 MM greater. Thus for each additional dollar spent to develop Alternative 6b above Alternative 5c a \$1.80 benefit would be realized.

Alternative 5c in comparison to Alternative 5 showed a reduction in the present net value of \$6 MM. The contributor to this reduction was minerals \$35 MM. The timber program increased while the range, recreation and wildlife programs stayed the same. Total costs increased by \$6 MM. There was no major shifts in land designation. Mineral emphasis decreased by 1 percent and wilderness increased by 1 percent.

Land designation for Alternative 5c is 34 percent minerals emphasis. Current management emphasis was next with 30 percent of the land designation, in comparison to Benchmark Maximum PNV, where 55 percent was designated to minerals and 10 percent to current. Alternative 8 (Current Management) land designation was 3 percent to minerals and 18 percent to current. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 2 (RPA) was 32 to a mineral emphasis compared to the 34 percent in Alternative 5c and 11 percent to current compared to the 30 percent in Alternative 5c. Alternative 6b had 27 percent in current management and 34 percent in minerals. The major difference of Alternative 2b is 24 percent designation to a range emphasis, while Alternative 5c had less than 1 percent.

Designation of the Forest land base to 34 percent minerals and 30 percent current emphasis is an efficient use of the land. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3852 MM, while the change in cost was a difference of \$6.0 MM more than Benchmark Maximum PNV. The designation in Alternative 5c may be justified by the increased nonmarket resources benefits as well as the range benefits.

i. Alternative 6

This alternative was developed to continue the direction of the Unit Plans and to develop management strategies in response to changing needs within local and National demands. Outputs and emphasis are controlled to meet the objectives of this alternative. The 10 year timber program was specified with a leveling across the Forest. AUM's are held to current levels. About 43,000 acres are designated to benefit wildlife and another 9,800 acres went to a wilderness prescription in addition to the Absaroka-Beartooth Wilderness. Some 62,000 acres are constrained to a roadless management prescription.

Grazing continues at about current levels, recognizing a slight decrease due to oil and gas development for two time periods.

Oil production is one of the highest among the alternatives. Other resources are maintained, although impact to the landscape is one of the most negative.

The wildlife habitat values are to be maintained. However, the higher timber volume and oil production will most likely necessitate some intrusion upon habitat. The bottom ecosystems are designated to a variety of prescriptions, including some emphasis to wildlife.

The timber harvest and oil production will create more access in those areas affected.

Out of the 258,280 acres available for roadless or wilderness designation, 78,678 are designated to roadless (31 percent). Therefore, recognizes a need for low development areas. Motorized access will be limited in these areas. In addition, a number of areas are identified for wildlife emphasis which will restrict or modify many activities. The wilderness setting is somewhat more complex in this alternative than in others. The Absaroka-Beartooth Wilderness, of course, stays in wilderness, although there are some inclusions and exclusions that are specific to refining the management of the area. This creates a net gain to the Absaroka-Beartooth Wilderness of approximately 4,100 acres.

The foregone economic benefits of implementing Alternative 6 in comparison to Benchmark Maximum PNV is \$212 MM. This reflects a foregone benefits of \$218 MM in the mineral program. Constraints used that created these foregone economic benefits were: timber constraints of non-declining yield, ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, and a constraint on management emphasis to insure that certain areas would be designated to a given emphasis.

In comparison to Benchmark Maximum PNV, the discounted costs are 1 percent lesser and the

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 6	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 1	Next Highest PNV Altern. 9
PNV	4037	4249	2220	3641	4042
Benefits					
Range	275	271	258	230	275
Minerals	3639	3857	1818	3246	3673
Rec.	97	97	76	87	97
Wildlife	195	190	170	246	195
Timber	4.4	8.2	3.9	3.1	6.6
Costs					
Range	49.8	49.2	35.9	39.5	50.0
Minerals	5.9	6.5	2.3	5.0	5.9
Rec.	13.1	14.7	2.0	15.3	13.8
Wildlife	7.6	7.4	1.7	11.4	7.6
Timber	9.9	10.3	7.7	9.0	10.5
Other\$	86.8	86.7	56.8	91.0	87.1

benefits are 5 percent lower. The decreased cost is a result of the decreased recreation and timber programs. Higher costs are attributed to meeting local demands for range outputs and wildlife objectives in order to meet ICO's 1 and 5. While the mineral recreation and timber programs are reduced, they did not decrease enough to compensate for the range and wildlife programs. Benefits are higher in wildlife and range outputs by \$9 MM. The largest drop in benefits occurred within the mineral program which decreased by \$218 MM. This was a result of a shift in emphasis from a mineral to a current and range emphasis.

The range program was increased by 2 percent from Benchmark Maximum PNV in the first period (5 years) and to 9 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and 17 percent by the end of the planning horizon. Oil production was restricted due to change in emphasis on certain areas to protect or enhance other values. The total production over the planning horizon was 6 MM barrels less than Benchmark Maximum PNV and was 178 MM barrels higher than Alternative 8 (Current Management). The timber program cost less than that in Benchmark Maximum PNV by \$0.4 MM and the benefits are significantly reduced. The reduced timber program in Alternative 8 (Current Management) decreased the benefits by \$0.5 MM over the planning period. Recreation/wildlife use was lower by 2 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was comparable too.

Alternative 1 is the closest in total discounted cost, and was just \$2 MM less. All resources with the exception of wildlife outputs are higher than Alternative 1. Cost, on the other hand, exceeds Alternative 1 in the recreation and wildlife programs. The greatest difference in cost of a resource program is in the range program with a difference of \$10.3 MM. Alternative 6 exceeds

Alternative 1 benefits in the minerals, recreation, wildlife and timber programs. These programs exceed the benefits by \$449 MM. The increase in cost and constraints had a \$396 MM dollar positive impact on the present net value.

Alternative 9 is somewhat higher in terms of present net value. It exceeds Alternative 6 in most resource values and equals those it doesn't exceed. The difference in total benefits is \$7 MM, of which \$34 MM is related to oil production. Timber is down by \$2.2 MM, while range, recreation and wildlife are the same. The cost of Alternative 9 exceeds Alternative 6 by \$2 MM and the present net value of Alternative 9 is \$5 MM greater. Thus for each additional dollar spent to develop Alternative 9 above Alternative 6 a \$2.50 benefit would be realized.

Land designation for Alternative 6 is 34 percent minerals emphasis and 28 percent to current emphasis, in comparison to Benchmark Maximum PNV where 55 percent was designated to minerals and 10 percent to current. Alternative 8 (Current Management) land designation was about 3 percent to minerals and 18 percent to current. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 1 was 11 percent to a mineral emphasis compared to 34 percent in Alternative 6 and only less than 1 percent to current compared the 28 percent in Alternative 6. Alternative 9 had 12 percent and 27 percent designated to minerals and current, respectively.

Designation of the Forest land base to 34 percent minerals and 28 percent current emphasis is an efficient use of the land. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3918 MM, while the change in cost was a difference of \$0.4 MM more than Benchmark Maximum PNV. The designation in Alternative 6 may be justified by the increased nonmarket resources benefits.

j. Alternative 6a

This Alternative was developed the same as Alternative 6 using specific output and control on emphasis to meet the objectives of the alternative. Additional wilderness was specified. The 10 year timber program was specified with a leveling across the Forest. AUM's are held to current levels. About 43,000 acres are designated to benefit wildlife and another 35,000 acres went to a wilderness prescription in addition to the Absaroka-Beartooth Wilderness. Some 45,000 acres are constrained to a roadless management prescription.

Grazing levels are about the same as current with a slight decrease in response to oil development.

Oil production is about the same as Alternative 5. Impact to the landscape is fairly high. Other renewable resources tend to be maintained.

In addition to the acres constrained for wildlife emphasis, another 118,000 acres are designated. Outside these areas, however, management for commodity values is intensified to achieve the assigned levels.

The opportunity for motorized access in the 418,000 acres of roadless and wilderness is eliminated, although little is available there currently. The wildlife emphasis areas are also limited in access. The remaining areas will receive greater roading to produce the timber and oil.

This alternative recognizes a limited long-term need for low development areas. The roadless and wildlife areas (approximately 88,000 acres) are considered to be low development areas.

Of the 258,280 acres in roadless condition, 44,836 acres (17 percent) are kept in roadless management.

Wilderness additions amount to 33,410 acres or 13 percent of the available roadless. Total wilderness equals 373,251 acres.

The foregone economic benefits of implementing Alternative 6a in comparison to Benchmark Maximum PNV is \$240 MM. This reflects a foregone benefits of \$234.4 MM in the mineral program, \$10.8 MM in the timber program. Constraints used that created these foregone economic benefits were: timber constraints of nondeclining yield, ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, and a constraint on management emphasis to insure that certain areas would be designated to a given emphasis. In addition to these constraints, selected areas are to be managed under a roadless and/or wilderness theme.

In comparison to Benchmark Maximum PNV, the discounted costs are 7 percent higher while the benefits are 5 percent lower. The higher costs are attributed to the more intense range and timber programs needed to meet ICO's 1 and 6 as well as the objective of the alternative. While all other programs and are reduced, it was not enough to compensate for the higher costs programs. Benefits are lower for the mineral and timber programs by \$236 MM. Recreation benefits are the about the same and range exceeded Benchmark Maximum PNV by \$9 MM.

The range program was increased by 1 percent over Benchmark Maximum PNV in the first period (5 years) and was 4 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and 12 percent by the end of the planning horizon. Oil production became restricted due to roadless and wilderness designation and was reduced by 15 MM barrels over the planning horizon when compared to Benchmark Maximum PNV, and was 169 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades where it was not in the Benchmark Maximum PNV. This plus the continuing program

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 6a	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 7a	Next Highest PNV Altern. 6
PNV	4009	4249	2220	4060	4037
Benefits					
Range	280	271	258	288	275
Minerals	3622	3857	1818	3686	3639
Rec.	97	97	76	90	97
Wildlife	190	190	170	174	195
Timber	7.6	8.2	3.9	7.5	3.8
Costs					
Range	51.3	49.2	35.9	57.2	49.8
Minerals	5.9	6.5	2.3	6.0	5.9
Rec.	15.0	14.7	2.0	13.8	13.1
Wildlife	7.3	7.4	1.7	6.5	7.6
Timber	20.5	10.3	7.7	15.4	9.9
Other\$	87.3	86.7	56.8	87.1	86.8

over the planning horizon increased the program costs while the benefits decreased \$0.6 MM. The reduced timber program in Alternative 8 (Current Management) reduced the benefits by \$3.7 MM over the planning period. Recreation/wildlife use was equal in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 3 percent greater.

Alternative 7a is the closest in total discounted cost at only \$1 MM less. All resources with the exception of recreation and timber outputs are lower than Alternative 7a. Cost, on the other hand, exceeds Alternative 7a in the range mineral programs. The small increase in cost and constraints had a \$51 MM dollar negative impact on the present net value.

Alternative 6 is higher in terms of present net value. It exceeds Alternative 6a resource values in the wildlife and mineral resources. The difference in total benefits is \$22 MM. The cost of Alternative 6a exceeds Alternative 6 by \$14 MM, while the present net value of Alternative 6 is \$28 MM greater. Thus, for each additional dollar spent to develop Alternative 6a above Alternative 6, a \$.50 benefit would be realized.

The shift in land designation that was meaningful was a change in range emphasis from 1 percent to 4 percent, an increase in wilderness of about 1 percent and a decrease in wildlife emphasis by 4 percent.

Land designation for Alternative 6a is 34 percent mineral emphasis. Current was next with 27 percent of the land designation, in comparison to Benchmark Maximum PNV where 55 percent was designated to minerals and 10 percent to current. Alternative 8 (Current Management) land designation was 3 percent to Minerals and 18 percent to current. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). The major difference in land designation in Alternative 7a was 27 percent to range emphasis compared to 4 percent in Alternative 6a. The shift was from current management emphasis. Alternative 6 had 34 percent and 28 percent designated to minerals and current, respectively.

Designation of the Forest land base in this manner is less efficient use of the land than in other types of emphasis. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3910 MM, while the change in cost was a difference of \$12 MM. However, the designation in Alternative 6a may be justified by the increased nonmarket resources benefits of roadless and wilderness.

k. Alternative 6b

This Alternative was developed the same as Alternative 6, using specific outputs and control

on emphasis to meet the objectives of the alternative. Additional wilderness was specified. The 10 year timber program was specified with a leveling across the Forest. AUM's are held to current levels. About 43,000 acres are designated to benefit wildlife and another 107,400 acres went to a wilderness prescription in addition to the Absaroka-Beartooth Wilderness. Some 37,000 acres are constrained to a roadless management prescription.

Grazing levels are about the same as current with a slight decrease in response to oil development.

Oil production is slightly less than Alternative 6 and 6a. Impact to the landscape is fairly high. Other renewable resources tend to be maintained.

The additional wilderness and roadless designation will protect much wildlife habitat, although little enhancement can occur. In addition to the required 45,000 acres of wildlife emphasis, the analysis designated another 85,000 acres to this management. The riparian areas will be protected and enhanced in these areas.

The opportunity for motorized access is eliminated in the additional wilderness and roadless areas, although little now occurs. The roading will be intensified on the remaining areas to produce the timber and oil.

This alternative recognizes a limited long-term need for low development areas by designating 43,000 acres to wildlife management and 37,000 acres to roadless management.

Out of the 258,280 acres in roadless condition, 37,132 acres (14 percent) are kept in roadless management. Wilderness additions of 107,000 acres, plus the Absaroka-Beartooth Wilderness, create a total of 446,841 acres of classified wilderness.

The foregone economic benefits of implementing Alternative 6b in comparison to Benchmark Maximum PNV is \$281 MM. This reflects a foregone benefits of \$269.2 MM in the mineral program and \$5.9 MM in the timber program, \$10.7 MM in the Recreation program and \$1.6 MM in the Wildlife program. Constraints used that created these foregone economic benefits were: timber constraints of nondeclining yield, ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, and a constraint on management emphasis to insure that certain areas would be designated to a given emphasis. In addition to these constraints, selected areas are to be managed under a roadless and/or wilderness theme.

In comparison to Benchmark Maximum PNV, the discounted costs are 2 percent higher while the benefits are 6 percent lower. The increased cost is a result of the increased range and timber programs in response to ICO's 1 and 6. While other

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 6b	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 4	Next highest PNV Altern. 5
PNV	3968	4249	2220	3798	4001
Benefits					
Range	280	271	258	271	277
Minerals	3587	3857	1818	3402	3604
Rec.	84	97	76	93	99
Wildlife	188	190	170	203	191
Timber	7.2	8.2	3.9	6.9	6.5
Costs					
Range	51.5	49.2	35.9	48.9	50.3
Minerals	5.7	6.5	2.3	5.6	5.8
Rec.	12.4	14.7	2.0	15.9	14.0
Wildlife	7.0	7.4	1.7	8.3	7.4
Timber	15.2	10.3	7.7	11.0	12.1
Other\$	86.2	86.7	56.8	88.5	87.5

resource program costs are reduced, they did not decrease enough to compensate for the range and timber programs. Benefits are lower in all resources except range, which increased some \$9 MM. The largest drop in benefits occurred within the mineral program, which decreased by \$270 M. This was largely a result of acres going into a roadless and wilderness designation.

The range program was reduced by 2 percent from Benchmark Maximum PNV in the first period (5 years) and to 4 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and an 12 percent by the end of the planning horizon. Oil production became restricted due to roadless and wilderness designation, and was some 18 MM barrels less in comparison to Benchmark Maximum PNV and was 166 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs, while the benefits decreased \$1 MM. The reduced timber program in Alternative 8 (Current Management) had reduced the benefits by \$3.3 MM over the planning period. Recreation/wildlife use was decreased by 11 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 9 percent less.

Alternative 4 is the closest in total discounted cost by being at the same level. All resources with the exception of recreation and wildlife outputs are higher than Alternative 4. Cost, also, exceeds Alternative 4 in the recreation and wildlife programs. The biggest difference in cost is in the timber program, which is \$42 MM more than Alternative 4. The constraints in Alternative 4 had a \$170 MM dollar negative impact on the present net value.

Alternative 5 is somewhat higher in terms of present net value. It exceeds Alternative 6b in all

resources except range outputs. The difference in total benefits is \$32 MM. Wildlife is up by \$3 MM, while range is down by \$3 MM. The cost of Alternative 6b exceeds Alternative 5 by \$1 MM, while the present net value of Alternative 5 is \$32 MM greater. Thus for each additional dollar spent to develop Alternative 6b above Alternative 5, a \$32 loss would be realized.

Alternative 6b in comparison to Alternative 6 showed a reduction in the present net value of \$69 MM. The major contributor to this reduction was minerals at \$52 MM. Most resource programs decreased in value, except range and timber programs which increased. Costs increased for range and timber programs, while decreasing or staying the same for the other programs. Total costs increased by \$5 MM. The shift in land designation that was meaningful was a change in range emphasis from 1 percent to 4 percent, increase in wilderness of 1 percent, and a decrease in wildlife emphasis by 4 percent.

Land designation for Alternative 6b is 34 percent minerals, 27 percent current and 15 percent wilderness emphasis, in comparison to Benchmark Maximum PNV where 55 percent was designated to minerals, 10 percent to current, and 14 percent to wilderness. Alternative 8 (Current Management) land designation was 3 percent to minerals and 18 percent to current and 17 percent to wilderness. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 4 was 33 percent to a mineral emphasis compared to 34 percent in Alternative 6b, and 30 percent to current compared the 27 percent in Alternative 6b. Alternative 5 had 34 percent and 31 percent designated to minerals and current respectively. Fourteen percent of the land designation in Alternative 5 went to a wilderness emphasis.

Designation of the Forest land base to meet the objectives of the Alternative is a less efficient use of the land than other types of emphasis. This

type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3874 MM, while the increase in cost was a difference of \$24 MM. However, the designation in Alternative 6b may be justified by the increased nonmarket resources benefits of roadless and wilderness.

I. Alternative 7

This alternative was developed to optimize the production of timber, domestic livestock grazing, and oil and gas development (market commodities) while keeping in mind the objective of multiple use management. The constraints level for these outputs are derived from the benchmarks as each resource achieved an optimal level. District levels are established in order to level the production of the outputs across the Forest. AUM's are set at a minimum of 875,000 increasing to 982,000 by the last period. Oil production was set at a minimum of 15 MM barrels the first period decreasing to 128 M by 11 period. Timber was set at the 10-year timber program. Thus, the Forest would strive to the maximum extent possible to meet its role in contributing to the National and local economies. The only wilderness allowed was Lost Water Canyon and the Absaroka-Beartooth Wilderness, totaling 349,641 acres. No roadless constraints are made.

The grazing level exceeds the current level to the detriment of other nonmarket goods.

Oil production is 344.4 MM barrels over the production phase of the alternative. Considerably more acres are put under market emphasis management than in other alternatives.

Wildlife habitat emphasis was designated to about 88,000 acres. These acres have little potential for market good production. The other multiple-use prescriptions will protect wildlife habitats, but not enhance these values.

Roading density will increase from current to support the market goods production. The only

area that will not specifically be roaded is the Lost Water Canyon, the Absaroka-Beartooth Wilderness, and the 8,300 acres of roadless.

This alternative does not recognize any long-term need for roadless area. The analysis, however, of the 258,280 acres in roadless condition, only 8,366 acres (3 percent) are kept in roadless condition. The areas in wilderness are Lost Water Canyon and the Absaroka-Beartooth Wilderness, totaling 349,641 acres. There are no identified wildlife management areas in this alternative.

The foregone economic benefits of implementing Alternative 7 in comparison to Benchmark Maximum PNV is \$164 MM. This reflects a foregone benefits of \$145.5 MM in the Mineral program and \$15.2 MM in the Wildlife program. Constraints used that created these foregone economic benefits were: timber constraints of sequential bounds (upper of 20 percent and lower of 10 percent), timber floor and ceiling for the Forest and the Districts, and Forest and District floors for AUM's.

In comparison to Benchmark Maximum PNV, the discounted costs are 10 percent higher while the benefits are 3 percent lower. The increased cost is a result of increasing the production of market commodities (range, oil and timber). The major cost increases were in the range and timber programs of \$8.7 MM and 7.7 M respectively, which was needed to meet the objectives of the alternative. Benefits are higher in the range program, which increased some \$17 MM. The largest drop in benefits occurred within the mineral program, which decreased by \$146 MM. This was largely a result of more acres going into a range intensity emphasis designation.

The range program was increased by 2 percent from Benchmark Maximum PNV in the first period (5 years) and to 9 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management) which showed a 1 percent increase in the first period and an 17 percent by

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 7	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 5a	Next Highest PNV Altern. 2
PNV	4085	4249	2220	3920	4100
Benefits					
Range	288	271	258	277	287
Minerals	3711	3857	1818	3524	3715
Rec.	96	97	76	101	96
Wildlife	174	190	170	189	178
Timber	7.7	8.2	3.9	7.3	5.7
Costs					
Range	57.9	49.2	35.9	49.7	53.6
Minerals	6.0	6.5	2.3	5.8	6.0
Rec.	14.9	14.7	2.0	17.9	13.9
Wildlife	6.6	7.4	1.7	8.0	6.7
Timber	18.0	10.3	7.7	14.0	14.0
Other\$	87.7	86.7	56.8	92.5	87.2

the end of the planning horizon. Oil production was somewhat restricted due to balancing of resource programs, but the program produced some 6 MM barrels less than Benchmark Maximum PNV and was 178 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs by \$7.7 MM while the benefits decreased \$5.5 MM. The reduced timber program in Alternative 8 (Current Management) increased the benefits by \$3.8 MM over the planning period. Recreation/wildlife use was decreased by 2 percent in the first period compared to Benchmark Maximum PNV and by the end of the planning horizon the programs were equal.

Alternative 5a is the closest in total discounted cost, and was just \$4 MM less. All resources with the exception of recreation and wildlife outputs are lower than Alternative 5a. Cost, on the other hand, exceeds Alternative 5a in most resource programs except timber where it was \$4 M less. The major difference in cost is the range program which is \$8.2 MM greater in Alternative 7. The increase in cost and constraints had a \$165 MM dollar positive impact on the present net value.

Alternative 2 is somewhat higher in terms of present net value. It exceeds Alternative 7 only in the minerals and wildlife program values. The difference in total benefits is \$5 MM, of which \$4 MM is related to oil production and \$4 MM to the wildlife program. Timber is down by \$2 MM and range is down \$1 MM. The cost of Alternative 7 exceeds Alternative 2 by \$11 MM, while the present net value of Alternative 2 is \$15 MM greater. Thus, for each additional dollar spent to develop Alternative 7 above Alternative 2 a \$1.36 benefit would be realized.

Land designation for Alternative 7 is 30 percent to minerals emphasis. Range was next with 27 percent of the land designation and wilderness received 15 percent, in comparison to Benchmark Maximum PNV where 55 percent was designated to minerals and zero to range. The wilderness designation was 14 percent. Alternative 8 (Current Management) land designation was 3 percent to minerals and less than 1 percent to range. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 5a had 35 percent to minerals, less than 1 percent to range and 23 percent to wilderness. Alternative 2 had 32 percent and 26 percent designated to minerals and range, respectively. Fourteen percent of Alternative 2 went to a wilderness emphasis designation.

Designation of the Forest land base to a high market commodity emphasis is less efficient use

of the land in other types of emphasis. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$4007 MM, while the change in cost was a difference of \$15.9 MM. The designation in this Alternative may be justified by the increased market resources benefits.

m. Alternative 7a

This alternative was formulated the same as Alternative 7, except that 50,800 acres are specified for wilderness classification in addition to the Absaroka-Beartooth Wilderness. There are no roadless constraints.

Grazing is at the same level as Alternative 7.

Oil production drops only very slightly in response to greater wilderness. The impact to the landscape is only slightly lessened.

No specific wildlife management was identified for this alternative, although 83,000 acres are designated in the analysis. Management is intensified on the remaining areas to optimize the market values.

Motorized access is restricted in the wilderness areas. Other access throughout the Forest will be increased to meet the timber, oil, and range emphasis.

This alternative recognizes no long-term need for low development areas and no acres are designated. The existing areas are needed for market goods production.

Of the 258,280 acres in roadless condition, none are retained. An additional 50,800 acres are designated to wilderness. The Absaroka-Beartooth Wilderness remains classified, making a total of 390,641 acres.

The foregone economic benefits of implementing Alternative 7a in comparison to Benchmark Maximum PNV is \$190 MM. This reflects a foregone benefits of \$170.5 MM in the Mineral program, \$5.8 MM in the Timber program, \$6.1 MM in the Recreation program and \$15.1 MM in the Wildlife program. Constraints used that created these foregone economic benefits were: timber constraints of sequential bounds (upper bounds of 20 percent and a lower bounds of 10 percent) and floors and ceiling for the Forest and the Districts, Forest and District floors for AUM's, and a constraint on management emphasis to insure that certain areas would be designated to a roadless and/or wilderness prescription.

In comparison to Benchmark Maximum PNV, the discounted costs are 6 percent higher while the benefits are 4 percent lower. The increased cost is a result of the increased emphasis on market commodities. While the mineral and wildlife programs are reduced, they did not drop enough to compensate for the increased range program. Benefits are lower in all resources except range,

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 7a	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 7b	Next Highest PNV Altern. 7
PNV	4060	4249	2220	3946	4085
Benefits					
Range	288	271	258	288	288
Minerals	3686	3857	1818	3571	3711
Rec.	90	97	76	91	96
Wildlife	174	190	170	173	174
Timber	7.5	8.2	3.9	7.4	7.7
Costs					
Range	57.2	49.2	35.9	57.6	57.9
Minerals	6.0	6.5	2.3	5.8	6.0
Rec.	13.8	14.7	2.0	13.7	14.9
Wildlife	6.5	7.4	1.7	6.4	6.6
Timber	15.4	10.3	7.7	14.3	18.8
Other\$	87.1	86.7	56.8	86.6	87.7

which increased some \$17 MM. The largest drop in benefits occurred within the mineral program which decreased by \$171 MM. This was largely a result of acres going into a more intensive range emphasis designation.

The range program was increased by 2 percent from Benchmark Maximum PNV in the first period (5 years) and to 9 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and 17 percent by the end of the planning horizon. Oil production was reduced due to other market commodity emphasis designation by some 9 MM barrels over the planning horizon, compared to Benchmark Maximum PNV, and was 175 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs by \$5.1 MM while the benefits decreased \$0.7 MM. The reduced timber program in Alternative 8 (Current Management) also had decreased benefits by \$3.6 MM over the planning period. Recreation/wildlife use was decreased by 7 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 5 percent less.

Alternative 7b is the closest in total discounted cost, and was just \$2 MM less. All resources with the exception of recreation outputs are either the same or greater than Alternative 7a. Cost, on the other hand, exceeds Alternative 7b with the exception of range which is higher. The difference in cost and benefit by resource programs is similar, but somewhat higher in Alternative 7a. The small increase in cost and constraints had a \$114 MM dollar negative impact on the present net value.

Alternative 7 is somewhat higher in terms of present net value. It exceeds or equals Alternative 7a

in all resource values and equals it in the range and wildlife programs. The difference in total benefits is \$31 MM, of which \$25 MM is related to oil production. Wildlife is down by \$6 MM, while range is the same. The cost of Alternative 7 exceeds Alternative 7a by \$6 MM, while the present net value of Alternative 7 is \$25 MM greater. Thus for each additional dollar spent to develop Alternative 7 above Alternative 7a, a \$4 benefit would be realized.

Land designation for Alternative 7a is 30 percent to minerals emphasis. Range was next with 27 percent of the land designation and wilderness received 16 percent, in comparison to Benchmark Maximum PNV, where 55 percent was designated to minerals and zero to range. The wilderness designation was 2 percent less than in Alternative 7a. Alternative 8 (Current Management) land designation was 3 percent to minerals and less than 1 percent to range. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Alternative 7b had 30 percent and 26 percent designated to minerals and range, respectively. Eighteen percent of Alternative 7b went to a wilderness emphasis designation. Land designation in Alternative 7a was similar to Alternative 7 except for a 2 percent increase in wilderness designation.

Designation of the Forest land base to a high market commodity emphasis is less efficient use of the land in other types of emphasis. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3982 MM, while the change in cost was an increase of \$12.6 MM. The designation in this Alternative may be justified by the increased market resources benefits.

n. Alternative 7b

This Alternative was formulated the same as Alternative 7, except that 98,440 acres are restricted to wilderness in addition to the Absaroka-Beartooth Wilderness.

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 7b	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 5c	Next Highest PNV Altern. 6b
PNV	3946	4249	2220	3959	3968
Benefits					
Range	288	271	258	277	280
Minerals	3571	3857	1818	3569	3587
Rec.	91	97	76	100	84
Wildlife	173	190	170	191	188
Timber	7.4	8.2	3.9	6.4	7.2
Costs					
Range	57.6	49.2	35.9	50.3	51.5
Minerals	5.8	6.5	2.3	5.8	5.7
Rec.	13.7	14.7	2.0	16.0	12.4
Wildlife	6.4	7.4	1.7	7.4	7.0
Timber	14.3	10.3	7.7	15.9	15.2
Other\$	86.6	86.7	56.8	87.9	86.2

Grazing is at the same level as Alternative 7 and 7a.

Oil production falls below the other market emphasis alternatives due to the greater wilderness designation. The impact to the landscape is lessened considerably from Alternative 7.

The acres designated to wildlife management are the least of the market emphasis alternatives. This is reflective of the alternative's need to intensify market values production outside the wilderness areas.

The opportunity for motorized access is precluded in the additional wilderness areas. The remaining areas will become roaded to achieve the timber, oil, and range outputs.

This alternative does not recognize any long-term need for low development areas, although the Lost Water Canyon is designated to roadless by the analysis. There are no specific wildlife management areas in this alternative.

Of the 258,280 acres in roadless condition, 9,800 acres (4 percent) are kept in roadless management. This is Lost Water Canyon. The Wilderness designation gains about 98,000 acres.

The foregone economic benefits of implementing Alternative 7b in comparison to Benchmark Maximum PNV is \$303 MM. This reflects a foregone benefits of \$285.3 MM in the Mineral program, \$4.8 MM in the Timber program, \$5.0 MM in the Recreation program and \$16 MM in the Wildlife program. Constraints used that created these foregone economic benefits were: timber constraints of sequential bounds (upper of 20 percent and lower of 10 percent), floors and ceiling for the Forest and the Districts, Forest and District floors for AUM's, and a constraint on management emphasis to insure that certain areas would be designated to a roadless and/or wilderness theme.

In comparison to Benchmark Maximum PNV, the discounted costs are 5 percent higher while the

benefits are 7 percent lower. The increased cost is a result of increased emphasis on market commodities needed to carry out the objectives of the alternative. While some programs are reduced, they did not drop enough to compensate for increased range costs. The recreation programs are about the same. Benefits are lower in all resources except range, which increased some \$17 MM. The largest drop in benefits occurred within the mineral program which decreased by \$286 MM. This was a result of more acres going into a range intensive management designation.

The range program was increased by 2 percent from Benchmark Maximum PNV in the first period (5 years) and to 9 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and 17 percent by the end of the planning horizon. Oil production was reduced by 20 MM barrels due to wilderness designation and less acres being designated to a mineral emphasis when compared to Benchmark Maximum PNV, and was 164 MM barrels higher than Alternative 8 (Current Management). Timber was harvested in the first two decades, where it was not in the Benchmark Maximum PNV. This plus the continuing program over the planning horizon increased the program costs by \$4.0 MM while the benefits decreased \$6.8 MM. The reduced timber program in Alternative 8 (Current Management) decreased the benefits by \$0.8 MM over the planning period. Recreation/wildlife use was decreased by 6 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 5 percent greater.

Alternative 5c is the closest in total discounted cost, and was just \$1 MM less. The benefits for range, minerals and timber resources are lower than Alternative 5c. Cost, on the other hand, exceeds Alternative 5c except in the range program and the mineral program was similar. The biggest difference in cost is in the range and

recreation programs. The increase in cost and constraints had a \$13 MM dollar negative impact on the present net value.

Alternative 6b is somewhat higher in terms of present net value. However, the benefit only exceeds Alternative 7b in the wildlife and minerals program. The difference in total benefits is \$16 MM, most of which is related to oil production. Wildlife is up by \$15 MM, while range is down by \$8 MM. The cost of Alternative 7b exceeds Alternative 6b by \$6 MM, while the present net value of Alternative 6b is \$22 MM greater. Thus for each additional dollar spent to develop Alternative 7b above Alternative 6b, a \$3.67 loss would be realized.

Alternative 7b in comparison to Alternative 7 showed a reduction in the present net value of \$139 MM. Minerals, recreation and wildlife recreation activities contributed to the reduction in present net value. All the resource programs decreased in value except range program which was the same. Costs decreased for all programs. Total costs decreased by \$8 MM. The shift in land designation was not significant. Wilderness increased by 3 percent over Alternative 7.

Land designation for Alternative 7b is 30 percent to minerals emphasis. Range was next with 26 percent of the land designation and wilderness received 18 percent, in comparison to Benchmark Maximum PNV, where 55 percent was designated to minerals and zero to range. The wilderness designation was 4 percent less than Alternative 7b. Alternative 8 (Current Management) land designation was 3 percent to minerals and less than 1 percent to range. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Alternative 5c had 34 percent and less than 1 percent designated to minerals and range respectively. Sixteen percent of Alternative 5c went to a wilderness emphasis designation. Land designation in Alternative 6b was 34 percent to minerals, 4 percent to range and 15 percent to wilderness.

Designation of the Forest land base to a high market commodity emphasis is less efficient use of the land in other types of emphasis. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3866 MM, while the change in cost was a difference of \$12 MM. The designation of this Alternative may be justified by the increased market resources benefits.

o. Alternative 8 (Current Management)

This alternative was developed to maintain current output for range with a reduced output for timber that would meet current local mill capacity. The budget was constrained to the FY 81, 82 and 83 average with a 5 percent increase by period. The other outputs would follow the given

land designations needed to meet these alternative goals.

The grazing stays at the current actual use levels of between 800,000 AUM's to 893,800 AUM's leveling off at around 832,000 AUM's in the 9th period.

Oil production was reduced due to a greater number of acres going to a minimum management level to meet budget restrictions. Other renewable resources appear to be maintained.

Wildlife habitat protection and coordination stays about the same as existing conditions.

The reduced timber volumes of the existing program will necessitate a few additional roads.

Of the present 258,280 acres in roadless condition, 51 percent (132,324 acres) are designated to roadless management. Another 53,438 acres, or, 21 percent are designated to wilderness, making a total of 356,441 wilderness acres (including the Absaroka-Beartooth Wilderness).

The foregone economic benefits of implementing Alternative 8 (Current Management) in comparison to Benchmark Maximum PNV is \$2021 MM. This reflects a foregone benefits of \$1816.5 MM in the Mineral program, \$1.7 MM in the Timber program, \$8.3 MM in the Recreation program and \$14.3 MM in the Wildlife program. Constraints used that created these foregone economic benefits were: timber constraints of not to exceed the ten year program, floors and ceiling for the Forest and the Districts, Forest and District floors for AUM's, and a budget constraint based on fiscal years 82, 83, and 84 with a 5 percent increase per planning period.

In comparison to Benchmark Maximum PNV, the discounted costs are 39 percent lower and the benefits are 47 percent lower. The decreased cost is a result of the reduced budget which affected all resource program costs. Benefits are lower in all resources. The largest drop in benefits occurred within the mineral program, which decreased by \$2039 MM. This was largely a result of acres going into a minimum level of management designation.

The range program was about the same as Benchmark Maximum PNV in the first period (5 years) and was reduced by 7 percent at the end of the planning horizon. Oil production because of land designation was 184 MM barrels less than Benchmark Maximum PNV. Timber was harvested throughout the planning horizon. This reduced the timber program over the planning horizon and decreased the program costs by \$2.6 MM, while the benefits decreased \$4.3 MM.

Alternative 1 is somewhat higher in terms of present net value. It exceeds Alternative 8 (Current Management) in the range and timber values. The difference in total benefits is \$1485 MM, of which \$1428 MM is related to oil production. Wildlife is down by \$76 MM, while range is up by \$28 MM.

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 8(CM)	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost	Next Highest PNV Altern. 1
PNV	2220	4249	2220		3641
Benefits					
Range	258	271	258		230
Minerals	1818	3857	1818		3246
Rec.	76	97	76		87
Wildlife	170	190	170		246
Timber	3.9	8.2	3.9		3.1
Costs					
Range	35.9	49.2	35.9		39.5
Minerals	2.3	6.5	2.3		5.0
Rec.	2.0	14.7	2.0		15.3
Wildlife	1.7	7.4	1.7		11.4
Timber	7.7	10.3	7.7		9.0
Other\$	56.8	86.7	56.8		91.0

The cost of Alternative 1 exceeds Alternative 8 (Current Management) by \$65 MM, while the present net value of Alternative 1 is \$1421 MM greater. Thus for each additional dollar spent to develop Alternative 1 above Alternative 8 (Current Management), a \$21.86 benefit would be realized.

Land designation for Alternative 8 (Current Management) was 3 percent to minerals and 18 percent to current and 17 percent to wilderness emphasis. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent), in comparison to Benchmark Maximum PNV, where 10 percent was designated to current and 14 percent to wilderness. In the Benchmark Maximum PNV 55 percent of the land was designated to a mineral emphasis. Land designation in Alternative 1 was less than 1 percent to current and 11 percent to a mineral emphasis. The main designation in Alternative 1 was 54 percent to wildlife. The wilderness designation was 19 percent.

Designation of the Forest land base to meet the intent of this Alternative is less efficient use of the land in other types of emphasis. However, the designation mix indicates the optimal land designation, given a limited budget. This type of designation mix significantly reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$2080 MM, while the change in cost was a difference of \$17.1 MM less for Alternative 8 (Current Management). However, the land designation in Alternative 8 (Current Management) may be justified to maintain a current level of AUM's and a small timber program, given a limited budgets, in order to optimize the present net value.

p. Alternative 9 (Departure from Alternative 6)

The purpose of this Alternative was to determine the effect of a departure from nondeclining yield of Alternative 6. This alternative was to continue the direction of the Unit Plans and develop man-

agement strategies in response to changing needs within local and National demands. Outputs and emphasis are controlled to meet the objectives of this alternative. The 10 year timber program was specified with a leveling across the Forest. AUM's are held to current levels. About 43,000 acres are designated to benefit wildlife and another 9,800 acres went to a wilderness prescription in addition to the Absaroka-Beartooth Wilderness. Some 62,000 acres are constrained to a roadless management prescription.

Grazing continues at about current levels, recognizing a slight decrease due to oil and gas development for two time periods.

Oil production is one of the highest among the alternatives. Other resources are maintained, although impact to the landscape is one of the most negative.

The wildlife habitat values are to be maintained. However, the higher timber volume and oil production will most likely necessitate some intrusion upon habitat. The bottom ecosystems are designated to a variety of prescriptions, including some emphasis to wildlife.

The timber harvest and oil production will create more access in those areas affected.

Out of the 258,280 acres available for roadless or wilderness designation, 78,678 are designated to roadless (31 percent). Therefore, recognizes a need for low development areas. Motorized access will be limited in these areas. In addition, a number of areas are identified for wildlife emphasis which will restrict or modify many activities. The wilderness setting is somewhat more complex in this alternative than others. The Absaroka-Beartooth Wilderness, of course, stays in wilderness, although there are some inclusions and exclusions that are specific to refining the management of the area. This creates a net gain to the Absaroka-Beartooth Wilderness of approximately 4,100 acres.

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 9(Dep)	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 6	Next Highest PNV Altern. 7a
PNV	4042	4249	2220	4037	4060
Benefits					
Range	275	271	258	275	288
Minerals	3673	3857	1818	3639	3686
Rec.	97	97	76	97	90
Wildlife	195	190	170	195	174
Timber	6.6	8.2	3.9	3.8	7.5
Costs					
Range	50.5	49.2	35.9	49.8	57.2
Minerals	5.9	6.5	2.3	5.9	6.0
Rec.	13.8	14.7	2.0	13.1	13.8
Wildlife	7.6	7.4	1.7	7.6	6.5
Timber	10.5	10.3	7.7	9.9	15.4
Other\$	87.1	86.7	56.8	86.8	87.1

The foregone economic benefits of implementing Alternative 9 (Departure from Alternative 6) in comparison to Benchmark Maximum PNV is \$207 MM. This reflects a foregone benefits of \$183.4 MM in the Mineral program and \$1.8 MM in the Timber program. Constraints used that created these foregone economic benefits were: timber constraints of departures (harvest within bounds), ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, and a constraint on management emphasis to insure that certain areas would be designated to a given emphasis.

In comparison to Benchmark Maximum PNV, the discounted costs are about the same while the benefits are 5 percent lower. The increased cost is a result of the increased range and wildlife. The higher costs are attributed to meeting local demands for range and timber outputs and wildlife objectives in order to meet the intent of the alternative. While the mineral and recreation programs are reduced, they did not decrease enough to compensate for the range and wildlife programs. Benefits are higher in wildlife related outputs and range by \$9 MM. The largest drop in benefits occurred within the mineral program which decreased by \$184 MM. This was a result of a shift in emphasis from a mineral to a current and range emphasis.

The range program was increased by 1 percent from Benchmark Maximum PNV in the first period (5 years) and by 2 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 1 percent increase in the first period and 10 percent by the end of the planning horizon. Oil production was restricted due to change in emphasis on certain areas to protect or enhance other values. The total production over the planning horizon was 13 MM barrels less than Benchmark Maximum PNV and was 171 MM barrels higher than Alternative 8 (Current Management). The timber program cost more than that in Benchmark Maximum PNV by

\$0.2 MM, and the benefits were reduced. The reduced timber program in Alternative 8 (Current Management) decreased the benefits by \$2.7 MM over the planning period. Recreation/wildlife use was the same in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was 3 percent greater.

Alternative 6 is \$2 MM lower in total discounted cost and \$5 MM less in present net value. All resources were either higher or equal in cost to Alternative 6. Minerals and wildlife programs were the same cost. The benefits are the same except in the timber and mineral programs which was lower in Alternative 6 by \$36.8 MM.

Alternative 7a is the next higher alternative in relation to present net value. It exceeds Alternative 9 by \$29 MM in total benefits. Most of the increase came about through the minerals and range programs. The difference of \$13 MM is primarily related to the mineral program and \$13 MM to the range program. Recreation and wildlife programs benefits are decreased by \$7 MM and \$21 MM respectively. The cost of Alternative 7a exceed Alternative 9 by \$11 MM while the present net value of Alternative 9 by \$18 MM. By implementing Alternative 7a over Alternative 9 a benefit of \$1.64 would be realized for every dollar spent.

Land designation for Alternative 9 (Departure from Alternative 6) is 34 percent minerals emphasis and 29 percent to current emphasis, in comparison to Benchmark Maximum PNV, where 55 percent was designated to minerals and 10 percent to current. Alternative 8 (Current Management) land designation was 3 percent to minerals and 18 percent to current. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 6 was the same percentages. However, there were some minor acres changes in designation in current, minerals and timber designations. Alternative 7a land designation was 30 percent to minerals, 11 percent to current and 16 percent to wilderness.

Designation of the Forest land base to 34 percent minerals and 29 percent current emphasis is an efficient use of the land. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3955 MM, while the change in cost was a difference of \$0.9 MM less than Benchmark Maximum PNV. The designation in Alternative 9 (Departure from Alternative 6) may be justified by the increased nonmarket resources benefits.

q. Alternative 10 (Proposed Action)

This alternative was developed to continue the direction of the Unit Plans and to develop management strategies in response to changing needs within local and National demands. Outputs and emphasis are controlled to meet the objectives of this alternative. The 10 year timber program was specified with a leveling across the Forest. AUM's are held to current levels. About 359,071 acres are designated to benefit wildlife and another 11,800 acres went to a wilderness prescription in addition to the Absaroka-Beartooth Wilderness. Some 84,100 acres are constrained to a roadless management prescription.

Grazing continues at about current levels, recognizing a slight decrease due to oil and gas development for two decades.

Oil production is in the moderate range among the alternatives. Other resources are maintained, although impact to the landscape is one of the most negative.

The wildlife habitat values are to be maintained. However, the higher timber volume and oil production will most likely necessitate some intrusion upon habitat. The bottom ecosystems are designated to a variety of prescriptions, including some emphasis to wildlife.

The timber harvest and oil production will create more access in those areas affected.

Out of the 258,280 acres available for roadless or wilderness designation, 84,100 are designated to roadless (33 percent). Therefore, recognizes a need for low development areas. Motorized access will be limited in these areas. In addition, a number of areas are identified for wildlife emphasis which will restrict or modify many activities. The wilderness setting is somewhat more complex in this alternative than in others. The Absaroka-Beartooth Wilderness, of course, stays in wilderness, although there are some inclusions and exclusions that are specific to refining the management of the area. This creates a net gain to the Absaroka-Beartooth Wilderness of approximately 4,100 acres.

The foregone economic benefits of implementing Alternative 10 (Proposed Action) in comparison to Benchmark Maximum PNV is \$443 MM. This reflects a foregone benefits of \$452 MM in the Mineral program and a \$6.4 MM in the Range program. Constraints used that created these foregone economic benefits were: timber constraints of nondeclining yield, ten year timber program and floors and ceiling for the Forest and the Districts, Forest and District floors and ceiling for AUM's, and a constraint on management emphasis to insure that certain areas would be designated to a given emphasis.

In comparison to Benchmark Maximum PNV, the discounted costs are 6 percent lower and the benefits are 10 percent lower. The decreased cost is a result of the decreased programs in all resources except wildlife. The lower costs are attributed to maintaining current demands for range outputs and wildlife objectives in order to meet ICO's 1 and 5. Also more acres were designated to less intensity of management. While most programs are reduced, they did not decrease enough to compensate for the losses in benefits. Benefits are lower in recreation, minerals and range outputs by \$465 MM. The largest drop in benefits occurred within the mineral pro-

COMPARISON CHART
(Values in MM\$, discounted to 1978)

	Altern. 10(PA)	Benchmark MAX.PNV	No Action Altern. 8(CM)	Next Least Cost Altern. 8(CM)	Next Highest PNV Altern. 5a
PNV	3806	4249	2220	2220	3920
Benefits					
Range	264	271	258	258	277
Minerals	3404	3857	1818	1818	3524
Rec.	92	97	76	76	101
Wildlife	208	190	170	170	189
Timber	3.3	8.2	3.9	3.9	7.3
Costs					
Range	48.6	49.2	35.9	35.9	49.7
Minerals	5.4	6.5	2.3	2.3	5.8
Rec.	11.4	14.7	2.0	2.0	17.9
Wildlife	7.8	7.4	1.7	1.7	8.0
Timber	6.1	10.3	7.7	7.7	14.0
Others	85.7	86.7	56.8	56.8	92.5

gram which decreased by \$453 MM. This was a result of a shift in emphasis from a mineral to a current and range emphasis.

The range program was decreased by 2 percent from Benchmark Maximum PNV in the first period (5 years) and to 3 percent by the end of the planning horizon, as compared to Alternative 8 (Current Management), which showed a 2 percent drop in the first period and 5 percent decrease by the end of the planning horizon. Oil production was restricted due to change in emphasis on certain areas to protect or enhance other values. The total production over the planning horizon was 35 MM barrels less than Benchmark Maximum PNV and was 149 MM barrels higher than Alternative 8 (Current Management). The timber program cost less than that in Benchmark Maximum PNV by \$4.2 MM and the benefits are significantly reduced. The reduced timber program in Alternative 8 (Current Management) increased the benefits by \$0.6 MM over the planning period. Recreation/wildlife use was decreased by 2 percent in the first period compared to Benchmark Maximum PNV, but by the end of the planning horizon was equal to the Benchmark Maximum PNV.

Alternative 8(CM) is also the closest in total discounted cost, and was \$59 MM less. The increase in costs and constraints had a \$1586 MM dollar positive impact on the present net value.

Alternative 5a is somewhat higher in terms of present net value. It exceeds Alternative 10 (Proposed Action) in most resource values except

wildlife. The difference in total benefits is \$126 MM, of which \$120 MM is related to oil production, while range is down by \$13 MM. The cost of Alternative 5a exceeds Alternative 10 (Proposed Action) by \$23 MM and the present net value of Alternative 5a is \$114 MM greater. Thus for each additional dollar spent to develop Alternative 5a above Alternative 10 (Proposed Action) a \$4.96 benefit would be realized.

Land designation for Alternative 10 (Proposed Action) is 12 percent minerals emphasis and 27 percent to current emphasis, in comparison to Benchmark Maximum PNV where 55 percent was designated to minerals and 10 percent to current. Alternative 8 (Current Management) land designation was 3 percent to minerals and 18 percent to current. The main designation for Alternative 8 (Current Management) was minimum management level (48 percent). Land designation in Alternative 5a was 35 percent to a mineral emphasis compared to 12 percent in Alternative 10 (Proposed Action) and 27 percent to current the same as in Alternative 10 (Proposed Action).

Designation of the Forest land base to 12 percent minerals and 27 percent current emphasis is an efficient use of the land. This type of designation mix reduces the benefits from the market commodities, dropping the benefits from \$4136 MM to \$3671 MM, while the change in cost was a difference of \$10 MM less than Benchmark Maximum PNV. The designation in Alternative 10 (Proposed Action) may be justified by the increased non-market resources benefits.

APPENDIX B

TABLE B-20
MAJOR DATA TABLE (AVERAGE ANNUAL OUTPUTS)

Resources	Unit of Measure		Alternative/Benchmark																
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	CM 8	Dep 9	PA 10	MAX PNV	MIN LVL
Developed recreation projection M RVO 1980 = 306 (includes the use in the following 4 categories)																			
Decade 1	400	442	450	427	462	466	455	461	448	445	388	439	412	417	368	449	433	450	361
Decade 3	611	671	680	649	690	711	678	694	677	677	581	667	626	630	521	677	638	676	507
Decade 5	662	730	745	705	750	766	758	757	734	740	634	732	687	687	559	734	686	723	538
Decade 7	681	754	770	726	776	788	781	782	755	762	653	756	710	709	570	755	702	732	547
Primitive recreation M RVO 1983 = 2.2 (First year of Recreation Opportunity Spectrum (ROS))																			
Decade 1	5.0	4.4	4.5	4.3	4.6	4.7	4.5	4.6	4.5	4.5	3.9	4.4	4.1	4.2	3.7	4.5	4.3	4.5	3.6
Decade 3	6.1	6.7	6.8	6.5	6.9	7.1	7.0	6.9	6.8	6.8	5.8	6.7	6.3	6.3	5.2	6.8	6.4	6.8	5.1
Decade 5	6.6	7.3	7.4	7.0	7.5	7.7	7.6	7.6	7.3	7.4	6.3	7.3	6.8	6.9	5.6	7.3	6.9	7.2	5.4
Decade 7	6.8	7.5	7.7	7.3	7.8	7.9	7.8	7.8	7.6	7.6	6.5	7.6	7.1	7.1	5.7	7.5	7.0	7.3	5.5
Semiprimitive nonmotorized recreation MRVO 1983 = 7.6 (First year of ROS)																			
Decade 1	12.0	13.3	13.5	12.8	13.9	14.0	13.6	13.8	13.4	13.4	11.6	13.2	12.4	12.5	11.1	13.5	13.0	13.5	10.8
Decade 3	18.3	20.1	20.4	19.5	20.7	21.3	20.9	20.8	20.3	20.3	17.4	20.0	18.8	18.9	15.6	20.3	19.1	20.3	15.2
Decade 5	19.9	21.9	22.3	21.1	22.5	23.0	22.7	22.7	22.0	22.2	19.0	22.0	20.6	20.6	16.8	22.0	20.6	21.7	16.1
Decade 7	20.4	22.6	23.1	21.8	23.3	23.6	23.4	23.5	22.7	22.9	19.6	22.7	21.3	21.3	17.1	22.6	21.1	22.0	16.4
Semiprimitive motorized recreation M RVO 1983 = 101 (First year of ROS)																			
Decade 1	155	172	176	167	180	182	177	180	175	174	151	171	161	163	144	175	169	175	141
Decade 3	238	262	265	253	269	277	272	271	264	264	227	260	244	246	203	264	249	264	198
Decade 5	258	285	290	275	293	299	296	295	286	288	247	286	268	268	218	286	268	282	210
Decade 7	266	294	300	283	303	307	305	305	295	297	254	295	277	276	222	294	274	286	213
Roaded Natural recreation M RVO 1983 = 152 (First year of ROS)																			
Decade 1	228	252	257	243	264	266	259	263	255	254	221	250	235	238	210	256	247	256	206
Decade 3	348	382	388	370	393	405	398	396	386	386	331	380	357	359	297	386	364	385	289
Decade 5	377	416	424	402	428	437	432	431	419	422	361	418	392	391	319	419	391	412	307
Decade 7	388	430	439	414	442	449	445	446	431	434	372	431	405	404	325	430	400	417	312
Wilderness recreation M RVO (included in Dispersed Recreation as Primitive)																			
Decade 1	223	305	207	273	211	262	235	219	206	217	215	234	209	227	190	308	206	205	175
Decade 3	353	410	326	390	324	377	349	327	320	329	315	342	313	330	271	322	320	318	254
Decade 5	407	452	376	437	370	421	392	371	366	372	355	379	354	372	306	367	366	361	289
Decade 7	444	477	406	466	398	446	417	397	393	398	380	408	378	395	329	393	393	385	312
Dispersed recreation projection M RVO 1980 = 450 (includes the use in the following 5 categories)																			
Decade 1	530	555	566	456	575	580	570	573	564	560	508	551	527	530	481	565	551	560	485
Decade 3	915	851	902	874	891	907	896	895	885	877	790	841	805	806	706	885	872	876	712
Decade 5	1092	983	1057	1021	1033	1042	1035	1039	1026	1020	923	975	936	934	920	1026	1015	1013	826
Decade 7	1215	1067	1157	1116	1125	1128	1122	1130	1115	1108	1058	1018	1016	1016	894	1115	1110	1093	904
Primitive recreation M RVO 1983 = 150 (First year in ROS)																			
Decade 1	148	155	158	153	161	162	160	161	158	157	142	154	147	148	135	158	154	157	136
Decade 3	256	238	253	245	250	254	251	251	248	246	221	235	225	226	198	248	244	245	199
Decade 5	306	275	296	286	289	292	290	291	287	286	258	273	262	262	230	287	284	284	231
Decade 7	340	299	324	313	315	316	314	317	312	310	282	296	285	284	250	312	311	306	253
Semiprimitive nonmotorized recreation M RVO 1983 = 30 (First year in ROS)																			
Decade 1	32	33	34	33	34	35	34	34	34	34	31	33	32	32	29	34	33	34	29
Decade 3	55	51	54	52	53	54	54	54	53	53	47	50	48	48	42	53	52	53	43
Decade 5	66	59	63	61	62	63	62	62	62	61	55	59	56	56	49	62	61	61	50
Decade 7	73	64	69	67	68	68	67	68	67	66	60	63	61	61	54	67	67	66	54
Semiprimitive motorized recreation M RVO 1983 = 102 (First year in ROS)																			
Decade 1	101	105	108	104	109	144	108	109	107	106	97	105	100	101	91	107	105	106	92
Decade 3	174	162	171	166	169	172	170	170	168	167	150	160	153	153	134	168	166	166	135
Decade 5	208	187	201	194	196	198	197	197	195	194	175	185	178	178	156	195	193	193	157
Decade 7	231	203	220	212	214	214	213	215	212	210	191	201	193	193	170	212	211	208	172
Roaded natural recreation M RVO 1983 = 176 (First year in ROS)																			
Decade 1	175	183	187	180	190	191	188	189	186	185	168	182	174	175	159	186	182	185	160
Decade 3	302	281	298	288	294	299	296	295	292	290	261	277	266	266	233	292	288	289	235
Decade 5	361	325	349	337	341	344	342	343	339	337	305	322	309	308	271	339	335	334	273
Decade 7	401	352	382	368	371	372	370	373	368	366	333	349	336	335	295	368	366	361	298
Rural recreation M RVO 1983 = 76 (First year in ROS)																			
Decade 1	74	78	79	76	80	81	80	80	79	78	71	77	74	74	67	79	77	78	68
Decade 3	128	119	126	122	125	127	125	125	124	123	111	118	113	113	99	124	122	123	100
Decade 5	153	138	148	143	145	146	145	145	144	143	129	137	131	131	115	144	142	142	116
Decade 7	170	149	162	156	158	158	157	158	156	155	141	148	143	142	125	156	155	153	127
Big game hunting M RVO 1980 = 53.5 (included in Dispersed Recreation)																			
Decade 1	64	60	61	61	61	61	61	61	61	61	60	59	59	59	56	61	61	59	60
Decade 3	134	94	109	109	102	101	106	102	104	101	100	91	91	91	89	104	111	101	95
Decade 5	181	122	143	143	133	132	132	133	136	132	130	119	119	118	117	136	147	135	125
Decade 7	218	144	171	170	158	155	155	158	161	156	154	140	140	140	140	161	175	160	150
Small game hunting M RVO 1980 = 15.3 (included in Dispersed Recreation)																			
Decade 1	18	17	17	17	17	18	17	17	17	17	17	17	17	17	16	17	17	17	17
Decade 3	38	27	31	31	29	29	29	29	30	29	28	26	26	26	25	30	32	29	27
Decade 5	52	35	41	41	38	38	38	38	39	38	37	34	34	34	33	39	42	38	36
Decade 7	62	41	49	49	45	44	44	45	46	45	44	40	40	40	40	46	50	46	43
Bird hunting M RVO 1980 = 27.1 (included in Dispersed Recreation)																			
Decade 1	42	39	40	40	40	40	40	40	40	39	39	39	38	37	40	38	40	38	39
Decade 3	88	62	72	71	67	67	67	67	68	67	65	60	60	60	58	68	73	66	62
Decade 5	119	80	94	94	88	86	87	88	89	87	86	78	78	78	77	89	96	88	82
Decade 7	143	95	112	112	104	102	102	104	106	103	101	92	92	92	92	106	115	105	99
Fishing use M RVO 1980 = 48.0 (included in Dispersed Recreation)																			
Decade 1	46	44	44	43	44	44	44	43	44	43	43	42	42	42	40	44	44	42	43
Decade 3	96	67	78	78	73	72	73	73	74	72	71	65	65	65	63	74	79	72	68
Decade 5	129	87	102	102	95	94	94	95	97	94	96	85	85	84	86	97	105	96	90
Decade 7	156	103	122	121	113	111	111	113	115	111	110	100	100	100	100	115	125	114	107
Nature study M RVO 1980 = 13.6 (included in Dispersed Recreation)																			
Decade 1	13	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	12	12
Decade 3	27	19	22	22	20	20	20	20	21	20	20	18	18	18	18	21	22	20	19
Decade 5	36	24	29	29	27	26	26	27	27	26	26	24	24	24	23	27	29	27	25
Decade 7	44	29	34	34	32	31	31	32	32	31	31	28	28	28	28	32	35	32	30
Wilderness management M Acres (In addition to 339,841 acres of A/B Wilderness)																			
Decade 1	129.0	0.3	0.0	241.7	0.0	182.0	93.5	11.0	11.8	36.6	105.8	9.8	47.6	105.3	18.8	9.8	11.8	0.0	0.0

SUMMARY OF EFFECTS

TABLE B-20 (Continued)
MAJOR DATA TABLE (AVERAGE ANNUAL OUTPUTS)

Resources	Unit of Measure				Alternative/Benchmark															
	1980																			
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	CM	Dep	PA	MAX	MIN	
Roadless management	M Acres	1983 = 265,920																		
	116.8	128.6	120.4	16.6	157.5	45.9	125.9	184.4	125.5	120.1	81.6	93.1	80.3	64.3	184.8	109.0	114.7	0.0	0.0	
EVC-4 (Disturbed)	M Acres	1980 = 122																		
Decade 1	219	212	217	249	270	253	265	265	268	265	263	271	266	259	146	269	262	359	122	
Decade 3	172	230	234	209	226	210	222	221	224	222	220	229	224	218	112	224	208	398	81	
Decade 5	162	220	224	201	218	202	214	214	215	213	211	219	214	209	106	216	197	389	15	
Decade 7	154	214	218	196	213	197	209	208	209	207	206	213	209	203	100	210	187	403	10	
Wildlife habitat improvement	Acres	1980 Base = 75 Acres																		
Decade 1	1252	992	720	757	688	688	722	689	605	606	575	476	477	451	10	647	344	469	0	
Decade 3	9922	1513	1368	1412	1136	1171	1206	1171	1002	999	969	726	725	576	60	1132	876	822	0	
Decade 5	3914	1983	1764	1826	1447	1481	1584	1481	1362	1302	1241	927	927	902	100	1456	1408	1056	0	
Decade 7	4749	2348	2088	2204	1722	1756	1860	1756	1604	1513	1453	1052	1077	1052	120	1715	1826	1244	0	
Elk effective acres	M acres																			
Decade 1	461	444	437	451	447	448	441	441	450	438	447	436	439	445	453	448	441	439	455	
Decade 3	468	447	446	451	446	450	449	448	448	447	448	447	446	441	447	440	447	445	445	
Decade 5	465	447	451	449	451	450	449	450	448	448	450	447	447	447	439	446	438	451	443	
Decade 7	465	447	448	450	448	450	448	448	447	448	449	448	447	449	439	446	438	449	443	
Elk provided capacity	Elk	(1980 Base Year = 950 Elk)																		
Decade 1	1058	826	680	845	835	834	805	937	966	686	706	677	685	698	1042	845	972	684	1065	
Decade 3	1072	792	676	809	785	804	804	925	890	686	689	681	678	676	941	797	917	681	997	
Decade 5	1072	792	676	809	785	804	804	925	890	686	689	681	678	676	941	797	917	681	997	
Decade 7	1072	792	676	809	785	804	804	925	890	686	689	681	678	676	941	797	917	681	997	
Deer effective acres	M Acres																			
Decade 1	1598	1396	1457	1475	1421	1419	1414	1414	1431	1408	1411	1383	1386	1392	1431	1430	1466	1385	1560	
Decade 3	2014	1414	1611	1617	1501	1500	1504	1506	1528	1495	1489	1411	1410	1408	1564	1527	1591	1541	1755	
Decade 5	2019	1411	1616	1613	1508	1499	1503	1507	1528	1496	1491	1408	1407	1409	1564	1526	1590	1558	1756	
Decade 7	2020	1412	1611	1613	1502	1498	1500	1503	1527	1494	1488	1408	1407	1407	1563	1526	1590	1556	1756	
Deer provided capacity	M Deer	(1980 Base Year = 21,000 Deer)																		
Decade 1	30.2	23.4	23.8	25.5	24.0	23.9	23.7	26.0	24.7	22.5	22.6	21.9	22.0	22.1	26.5	24.2	27.7	22.1	29.6	
Decade 3	36.9	23.2	26.1	27.4	24.8	24.9	25.0	27.2	25.9	23.7	23.6	22.0	22.0	22.0	27.2	25.4	29.3	24.5	31.9	
Decade 5	36.9	23.2	26.1	27.4	24.8	24.9	25.0	27.2	25.9	23.7	23.6	22.0	22.0	22.0	27.2	25.4	29.3	24.5	31.9	
Decade 7	36.9	23.2	26.1	27.4	24.8	24.9	25.0	27.2	25.9	23.7	23.6	22.0	22.0	22.0	27.2	25.4	29.3	24.5	31.9	
Grouse effective acres	M Acres	(1980 Base Year = 202,000 Acres)																		
Decade 1	235	197	208	209	202	202	202	202	204	202	201	196	196	196	200	204	208	200	216	
Decade 3	317	187	236	237	211	210	210	211	217	210	209	186	186	187	239	217	228	229	274	
Decade 5	317	187	236	238	211	210	210	211	217	210	209	186	186	187	239	217	228	230	274	
Decade 7	317	187	236	238	211	210	210	211	217	210	209	186	186	187	239	217	228	230	274	
Old growth on suitable	timberland in	75 years	%																	
	47	35	22	53	40	47	36	33	51	18	33	15	26	32	80	46	54	45	0	
Fish habitat improvement	Acres	1980 Base = 0 Acres																		
Decade 1	28	22	24	26	24	24	25	24	24	24	22	22	22	21	3	24	24	21	0	
Decade 3	66	34	45	28	39	40	41	40	41	39	38	34	34	27	6	41	41	40	0	
Decade 5	88	45	58	62	49	51	54	51	53	51	48	44	44	42	10	53	53	53	0	
Decade 7	107	53	68	75	59	60	64	60	62	59	57	49	51	49	15	62	62	62	0	
Catchable Fish	M Fish																			
Decade 1																				
Streams	47.5	43.6	46.1	46.8	46.4	46.5	46.7	46.5	46.3	46.4	46.4	43.7	43.7	43.7	46.7	46.3	46.8	46.1	48.8	
Warm Water	29.1	25.5	26.3	27.6	24.3	26.6	25.7	25.2	24.8	24.8	24.6	24.2	24.1	24.1	22.9	25.2	24.8	25.4	22.9	
Lakes	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	
Total Decade 1	432.9	425.4	428.7	430.7	427.0	429.4	428.7	428.0	427.4	427.5	427.3	424.2	424.2	424.1	425.9	427.8	427.9	427.8	428.0	
Decade 3																				
Streams	53.5	50.7	53.3	53.4	53.3	53.3	53.3	53.3	53.3	53.3	53.2	50.7	50.7	50.7	50.1	53.3	53.4	53.1	48.8	
Warm Water	31.2	27.2	27.5	29.6	26.1	28.4	27.6	27.0	26.6	26.6	26.3	25.8	25.8	25.7	23.2	27.0	26.6	27.0	22.9	
Lakes	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	
Total Decade 3	441.0	434.2	437.1	439.3	435.7	438.0	437.2	436.6	436.2	436.2	435.8	432.8	432.8	432.1	429.6	436.6	436.3	436.4	428.0	
Decade 5																				
Streams	53.5	50.7	53.3	53.4	53.3	53.3	53.3	53.3	53.3	53.3	53.2	50.7	50.7	50.7	50.1	53.3	53.4	53.1	48.8	
Warm Water	31.2	27.2	27.5	29.6	26.1	28.4	27.6	27.0	26.6	26.6	26.3	25.8	25.8	25.7	23.2	27.0	26.6	27.0	22.9	
Lakes	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	
Total Decade 5	441.0	434.2	437.1	439.3	435.7	438.0	437.2	436.6	436.2	436.2	435.8	432.8	432.8	432.1	429.6	436.6	436.3	436.4	428.0	
Decade 7																				
Streams	53.5	50.7	53.3	53.4	53.3	53.3	53.3	53.3	53.3	53.3	53.2	50.7	50.7	50.7	50.1	53.3	53.4	53.1	48.8	
Warm Water	31.2	27.2	27.5	29.6	26.1	28.4	27.6	27.0	26.6	26.6	26.3	25.8	25.8	25.7	23.2	27.0	26.6	27.0	22.9	
Lakes	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	356.3	
Total Decade 7	441.0	434.2	437.1	439.3	435.7	438.0	437.2	436.6	436.2	436.2	435.8	432.8	432.8	432.1	429.6	436.6	436.3	436.4	428.0	
Potential livestock forage	M AUM	1980 Base = 875 M AUMS																		
Decade 1	827	902	887	887	896	896	896	896	894	899	900	906	906	916	878	893	865	884	0	
Decade 3	704	954	881	881	902	902	902	902	896	916	917	957	957	957	813	896	858	880	0	
Decade 5	728	973	898	898	920	919	919	919	913	933	934	977	977	975	833	914	875	899	0	
Decade 7	721	973	899	899	920	920	920	920	913	934	935	977	976	976	833	917	875	898	0	
Base timber sale schedule	MMBF	1980 = 1.5																		
Decade 1	3.5	2.2	4.4	3.4	4.1	6.7	6.7	6.7	4.0	8.4	6.7	6.0	6.0	6.0	4.0	3.1	3.0	0.0	0.0	
Decade 3	3.5	6.6	9.1	7.1	7.1	6.8	7.0	7.0	4.0	8.4	7.2	8.7	7.1	6.3	3.2	8.0	3.0	17.3	0.0	
Decade 5	3.5	8.8	9.2	7.6	7.0	6.8	7.0	7.0	4.0	8.4	7.2	11.2	9.6	10.0	3.2	6.5	3.0	15.9	0.0	
Decade 7	2.6	8.0	6.0	5.0	7.0	6.8	7.0	7.0	4.0	8.4	7.2	7.4	6.3	6.6	3.2	4.1	3.0	5.5	0.0	
Base timber sale schedule	MMCF	1980 = .33																		
Decade 1	1.0	0.6	1.3	1.0	1.2	1.9	1.9	1.9	1.1	2.4	1.9	1.7	1.7	1.7	1.1	0.9	0.9	0.0	0.0	
Decade 3	1.0	1.9	2.6	2.0	2.0	1.9	2.0	2.0	1.1</											

APPENDIX B

TABLE 8-20 (Continued)
MAJOR DATA TABLE (AVERAGE ANNUAL OUTPUTS)

Resources	Unit of Measure		1980													Alternative/Benchmark							CH	Dep	PA	MAX	MIN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	RPA	A	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Timber stand improvement	acres																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

SUMMARY OF EFFECTS

TABLE B-20 (Continued)
MAJOR DATA TABLE (AVERAGE ANNUAL OUTPUTS)

Resources	Unit of Measure	Alternative/Benchmark																		
		1980																		
		1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	CH 8	Dep 9	PA 10	MAX PMV	RIN LVL
Recreation costs	MM\$																			
Decade 1		.48	.44	.48	.50	.44	.56	.57	.50	.41	.47	.39	.47	.43	.43	.07	.44	.36	.47	.01
Decade 3		.74	.67	.72	.76	.67	.86	.88	.77	.63	.72	.59	.71	.66	.65	.09	.66	.55	.70	.02
Decade 5		.80	.73	.80	.83	.73	.93	.96	.84	.69	.79	.65	.78	.73	.71	.11	.72	.59	.76	.02
Decade 7		.82	.76	.83	.86	.76	.96	.99	.87	.71	.81	.67	.81	.75	.74	.11	.75	.61	.77	.02
Range costs	MM\$																			
Decade 1		1.79	1.80	2.04	2.06	2.08	2.06	2.07	2.08	2.05	2.06	2.07	2.00	1.94	1.95	1.50	2.07	1.96	2.07	.00
Decade 3		1.54	2.58	2.03	2.05	2.09	2.07	2.08	2.09	2.07	2.18	2.19	2.75	2.72	2.72	1.48	2.08	2.06	2.02	.00
Decade 5		1.58	2.73	2.07	2.08	2.13	2.10	2.12	2.13	2.11	2.23	2.24	2.92	2.88	2.88	1.51	2.12	2.11	2.07	.00
Decade 7		1.58	2.74	2.07	2.08	2.14	2.10	2.12	2.13	2.11	2.23	2.24	2.92	2.88	2.88	1.51	2.12	2.11	2.06	.00
Timber costs	MM\$																			
Decade 1		.34	.23	.30	.20	.29	.44	.44	.44	.32	.83	.64	.49	.39	.42	.31	.23	.21	.00	.00
Decade 3		.42	.90	.91	.60	.75	.83	.88	.91	.50	1.01	.77	1.01	.88	.77	.33	.59	.29	1.16	.00
Decade 5		.26	.74	.82	.61	.69	.67	.69	.69	.28	.67	.57	.77	.60	.64	.19	.40	.19	1.55	.00
Decade 7		.20	.79	.60	.45	.63	.68	.66	.70	.37	.91	.67	.79	.68	.73	.25	.35	.29	.54	.00
Wildlife costs	MM\$																			
Decade 1		.25	.20	.20	.21	.20	.22	.23	.20	.21	.20	.20	.20	.19	.19	.04	.21	.19	.20	.00
Decade 3		.55	.31	.38	.39	.35	.37	.38	.35	.36	.34	.33	.30	.30	.29	.08	.36	.37	.35	.00
Decade 5		.74	.39	.50	.52	.45	.48	.49	.45	.46	.44	.42	.38	.38	.37	.10	.46	.48	.45	.00
Decade 7		.90	.46	.59	.60	.52	.57	.58	.53	.54	.51	.49	.45	.45	.44	.12	.54	.57	.54	.00
Other costs	MM\$																			
Decade 1		3.77	3.61	3.61	3.67	3.63	3.84	3.88	3.64	3.60	3.62	3.57	3.64	3.61	3.59	2.35	3.61	3.56	3.59	1.35
Decade 3		3.77	3.61	3.61	3.67	3.63	3.84	3.88	3.64	3.60	3.62	3.57	3.64	3.61	3.59	2.35	3.61	3.56	3.59	1.35
Decade 5		3.77	3.61	3.61	3.67	3.63	3.84	3.88	3.64	3.60	3.62	3.57	3.64	3.61	3.59	2.35	3.61	3.56	3.59	1.35
Decade 7		3.77	3.61	3.61	3.67	3.63	3.84	3.88	3.64	3.60	3.62	3.57	3.64	3.61	3.59	2.35	3.61	3.56	3.59	1.35
Purchaser credit road costs	MM\$																			
Decade 1		.11	.08	.09	.05	.09	.13	.13	.13	.10	.29	.24	.17	.11	.13	.10	.07	.06	.00	.00
Decade 3		.16	.33	.31	.17	.27	.28	.29	.31	.19	.33	.25	.37	.29	.26	.11	.17	.10	.32	.00
Decade 5		.05	.19	.21	.16	.18	.17	.18	.18	.07	.15	.12	.20	.16	.17	.04	.10	.05	.40	.00
Decade 7		.00	.07	.06	.08	.09	.03	.06	.08	.04	.14	.11	.07	.09	.10	.03	.06	.06	.10	.00
Range costs (RBF)	MM\$																			
Decade 1		.14	.15	.14	.14	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.14	.15	.15	.14	.00
Decade 3		.11	.16	.13	.13	.14	.15	.15	.14	.15	.15	.15	.16	.16	.16	.13	.15	.14	.14	.00
Decade 5		.15	.16	.14	.13	.15	.15	.15	.15	.15	.15	.15	.16	.16	.16	.14	.15	.15	.14	.00
Decade 7		.12	.16	.14	.13	.15	.15	.15	.15	.15	.15	.15	.16	.16	.16	.14	.15	.15	.14	.00
Range costs (CP)	MM\$																			
Decade 1		.84	.92	.91	.91	.91	.91	.91	.91	.91	.92	.92	.92	.92	.92	.89	.91	.87	.91	.00
Decade 3		.72	.97	.92	.92	.93	.92	.92	.92	.92	.94	.94	.97	.97	.97	.83	.92	.87	.92	.00
Decade 5		.74	.99	.94	.94	.95	.94	.94	.94	.93	.95	.95	.99	.98	.99	.85	.93	.88	.94	.00
Decade 7		.74	.99	.94	.94	.95	.94	.94	.94	.96	.95	.95	.99	.99	.98	.85	.96	.88	.94	.00
Total capital investment costs	MM\$																			
Decade 1		2.27	2.25	2.31	2.27	2.31	2.44	2.44	2.39	2.32	2.59	2.49	2.41	2.33	2.34	1.89	2.28	2.19	2.19	.00
Decade 3		3.35	3.50	3.53	3.37	3.38	3.48	3.51	3.46	3.27	3.52	3.36	3.58	3.46	3.40	2.48	3.27	3.15	3.15	.00
Decade 5		3.90	3.81	3.96	3.90	3.78	3.82	3.86	3.81	3.62	3.79	3.68	3.84	3.76	3.76	2.81	3.68	3.62	3.62	.00
Decade 7		4.32	4.00	4.15	4.16	4.02	3.99	4.03	4.05	3.94	4.13	4.01	4.01	4.00	4.04	3.13	3.97	4.01	4.01	.00
Operation/maintenance costs	MM\$																			
Decade 1		2.36	2.27	2.39	2.38	2.39	2.55	2.57	2.47	2.37	2.57	2.46	2.43	2.37	2.37	1.50	2.36	2.26	2.30	.46
Decade 3		2.37	2.73	2.59	2.53	2.53	2.69	2.74	2.62	2.42	2.66	2.52	2.87	2.76	2.71	1.46	2.47	2.31	2.65	.46
Decade 5		2.40	2.76	2.62	2.59	2.57	2.70	2.73	2.61	2.40	2.60	2.50	2.85	2.75	2.75	1.43	2.46	2.33	2.51	.46
Decade 7		2.44	2.80	2.58	2.57	2.57	2.73	2.76	2.64	2.46	2.71	2.56	2.88	2.81	2.91	1.45	2.47	2.39	2.51	.46
Cash flow to U.S. Treasury	MM\$																			
Decade 1		43.2	49.9	50.0	46.7	48.6	48.4	48.2	48.1	49.3	48.9	48.9	50.0	49.9	48.5	26.8	49.3	46.5	55.9	.02
Decade 3		15.5	16.8	17.0	15.2	16.2	15.7	15.8	15.9	16.0	16.4	16.0	16.8	16.6	16.1	8.2	16.5	15.0	17.2	.03
Decade 5		4.5	6.2	6.0	5.6	5.8	5.4	5.7	5.8	5.7	6.0	5.9	6.6	6.4	6.2	3.2	6.0	5.5	4.3	.03
Decade 7		1.3	2.0	1.7	1.6	1.9	1.8	1.9	1.6	1.9	1.8	1.9	1.8	1.8	1.5	1.7	1.5	1.5	1.7	.03
PNV of Federal Receipts @ 4%		626	723	725	668	704	693	696	697	708	708	701	725	719	699	379	711	661	764	14
PNV of Federal Receipts @ 7.125%		557	640	644	597	624	625	625	631	630	612	640	632	617	359	632	588	678	80	
Cash flow to States	MM\$																			
Decade 1		10.8	12.5	12.5	11.7	12.2	12.1	12.1	12.0	12.3	12.2	12.2	12.5	12.5	12.1	6.7	12.3	11.6	14.0	.01
Decade 3		3.9	4.2	4.2	3.8	4.0	3.9	4.0	4.0	4.0	4.1	4.0	4.2	4.1	4.0	2.1	4.1	3.7	4.3	.01
Decade 5		1.1	1.5	1.5	1.4	1.5	1.4	1.4	1.5	1.4	1.5	1.5	1.6	1.6	1.6	.8	1.5	1.4	1.1	.01
Decade 7		.3	.5	.4	.4	.5	.4	.4	.5	.4	.5	.5	.5	.5	.5	.4	.4	.4	.4	.01
Recreation cash flow	MM\$																			
Decade 1		.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
Decade 3		.06	.06	.07	.06	.07	.07	.07	.07	.06	.06	.06	.06	.06	.06	.05	.06	.06	.06	.05
Decade 5		.06	.07	.07	.07	.07	.07	.07	.07	.07	.07	.06	.07	.07	.07	.05	.07	.07	.07	.05
Decade 7		.07	.07	.07	.07	.07	.08	.07	.07	.07	.07	.07	.07	.07	.07	.05	.07	.07	.07	.05
Oil cash flow	MM\$																			
Decade 1		41.9	48.6	48.6	45.2	47.2	46.8	46.7	46.6	47.9	47.4	47.5								

APPENDIX B

TABLE B-20 (Continued)
MAJOR DATA TABLE (AVERAGE ANNUAL OUTPUTS)

Resources	Unit of Measure	1980										Alternative/Benchmark									
		RPA																			
		1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	CH 8	Dep 9	PA 10	MAX PMV	MIN LVL	
Nonmarket resource benefits		MM\$																			
Decade 1		6.8	6.6	6.7	6.6	6.7	6.8	6.7	6.7	6.7	6.7	6.4	6.4	6.4	6.0	6.7	6.7	6.5	6.3		
Decade 3		13.8	10.2	11.8	11.6	11.1	11.0	11.0	11.1	11.2	10.9	10.5	10.0	9.9	9.8	9.4	11.2	11.8	11.0	9.9	
Decade 5		19.0	13.9	16.0	15.8	15.1	14.9	14.9	15.1	15.2	14.9	14.2	13.6	13.4	13.4	12.6	15.2	16.1	15.1	13.3	
Decade 7		22.4	16.0	18.7	18.4	17.4	17.1	17.0	17.4	17.6	17.1	16.4	15.6	15.4	15.4	14.7	17.6	18.7	17.4	15.5	
Benefits discounted at 4%		MM\$																			
Range		230	287	271	271	277	277	277	277	275	280	280	288	288	288	258	275	264	271	0	
Minerals (oil)		3246	3715	3718	3402	3604	3524	3560	3569	3639	3622	3587	3711	3686	3571	1818	3673	3404	3857	244	
Recreation		87	96	98	93	99	101	100	100	97	97	84	96	90	91	76	97	92	97	74	
Wildlife		246	178	205	203	191	189	190	191	195	190	188	174	174	173	170	195	208	190	181	
Timber		3.1	5.7	8.0	6.9	6.5	7.3	6.2	6.4	3.8	7.6	7.2	7.7	7.5	7.4	3.9	6.6	3.3	8.2	0	
Costs discounted at 4%		MM\$																			
Range		39.5	53.6	49.0	48.9	50.3	49.7	50.1	50.3	49.8	51.3	51.5	57.9	57.2	57.6	35.9	50.0	48.6	49.2	0.0	
Minerals (oil)		5.0	6.0	6.1	5.6	5.8	5.8	5.8	5.8	5.9	5.9	5.7	6.0	6.0	5.8	2.3	5.9	5.4	6.5	0.0	
Recreation		15.3	13.9	15.2	15.9	14.0	17.9	18.3	16.0	13.1	15.0	12.4	14.9	13.8	13.7	2.0	13.8	11.4	14.7	.4	
Wildlife		11.4	6.7	8.0	8.3	7.4	8.0	8.1	7.4	7.6	7.3	7.0	6.6	6.5	6.4	1.7	7.6	7.8	7.4	0.0	
Timber		9.0	14.0	14.9	11.0	12.1	14.0	15.8	15.9	9.9	20.5	15.2	18.8	15.4	14.3	7.7	10.5	6.1	10.3	0.0	
Other		91.0	87.2	87.0	88.5	87.5	92.5	93.5	87.9	86.8	87.3	86.2	87.7	87.1	86.6	56.8	87.1	85.7	86.7	32.5	
Benefits discounted at 7.125%		MM\$																			
Range		137	165	157	158	160	160	160	160	162	162	162	165	165	165	152	160	154	157	0	
Minerals (oil)		2336	2689	2691	2473	2609	2564	2580	2582	2640	2623	2605	2685	2670	2590	1339	2643	2462	2864	210	
Recreation		47	52	53	51	54	55	54	54	53	53	46	52	49	49	42	53	50	53	41	
Wildlife		121	93	104	102	98	98	98	98	100	98	96	91	91	90	88	100	105	97	94	
Timber		1.5	2.1	3.8	3.2	3.1	3.7	3.1	3.2	1.8	3.6	3.5	3.2	3.6	3.5	2.0	3.0	1.7	3.2	0	
Costs discounted at 7.125%		MM\$																			
Range		24.1	29.7	29.1	29.0	29.9	29.5	29.8	29.9	29.9	30.2	30.3	32.1	31.8	31.9	21.4	29.7	28.6	29.3	0.0	
Minerals (oil)		4.0	4.8	4.8	4.4	4.6	4.6	4.6	4.6	4.7	4.7	4.5	4.8	4.7	4.6	1.8	4.7	4.3	5.1	0.0	
Recreation		8.3	7.6	8.3	8.4	7.6	9.7	8.9	8.7	7.1	8.1	6.7	8.1	7.5	7.4	1.1	7.5	6.2	8.1	0.2	
Wildlife		5.6	3.5	4.1	4.2	3.8	4.1	4.2	3.8	3.9	3.8	3.6	3.5	3.4	3.3	0.8	3.9	3.9	3.8	0.0	
Timber		5.4	7.1	7.5	5.5	6.2	8.0	8.7	8.8	5.8	12.4	9.0	10.3	8.1	7.8	4.7	5.4	3.5	3.8	0.0	
Other		54.2	52.0	51.9	52.8	52.2	55.1	55.7	52.4	51.8	52.1	51.0	52.3	52.9	51.6	33.8	51.9	51.1	51.7	19.3	
Present value benefits (4%)		MM\$																			
Range		3812	4282	4300	3976	4178	4098	4132	4143	4210	4196	4146	4277	4246	4130	2327	4217	3972	4424	500	
Present value costs (4%)		MM\$																			
Range		171	181	180	178	177	188	192	183	173	187	178	192	186	184	106	175	165	175	33	
Present net value (4%)		MM\$																			
Range		3641	4000	4120	3798	4001	3910	3940	3959	4037	4009	3968	4085	4060	3946	2220	4042	3806	4249	467	
Benefit/cost ratio (4%)		MM\$																			
Range		22	24	24	22	24	22	22	23	24	22	23	22	23	22	22	24	24	25	15	
Foregone economic benefits (4%)		MM\$																			
Range		608	149	130	451	249	339	309	290	212	240	281	164	190	303	2021	207	443	0	3782	
Present value benefits (7 1/8 %)		MM\$																			
Range		2643	3000	3009	2788	2925	2881	2895	2898	2954	2939	2912	2997	2978	2899	1623	2958	2773	3175	344	
Present value costs (7 1/8 %)		MM\$																			
Range		102	105	106	105	104	111	113	108	103	111	106	111	108	107	64	103	98	102	20	
Present net value (7 1/8 %)		MM\$																			
Range		2541	2896	2904	2683	2821	2770	2782	2790	2852	2828	2807	2886	2871	2792	1560	2855	2675	3073	325	
Benefit/cost ratio (7 1/8 %)		MM\$																			
Range		26	29	29	27	28	26	26	27	29	26	28	27	28	27	25	29	28	31	18	
Foregone economic benefits (7 1/8 %)		MM\$																			
Range		531	177	169	390	252	303	285	283	221	245	266	187	203	281	1513	218	398	0	2748	
Research natural areas		Acres																			
Range		2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	2365	
Forest work force		Work-year equiv. (Additional WYE above 1980 base of 224)																			
Decade 1		66	54	66	66	66	86	91	78	66	91	74	74	66	66	-40	62	50	58	-167	
Energy consumption		Billion BTU																			
Decade 1		909	907	930	815	875	886	851	877	905	905	867	1092	908	891	481	904	892	942	162	
Decade 3		361	411	433	394	417	416	410	417	413	415	374	422	410	406	287	418	409	467	226	
Decade 5		328	227	366	354	368	373	366	373	364	364	322	362	350	350	267	359	361	350	000	
Decade 7		320	483	535	351	354	355	349	354	347	348	304	355	334	507	262	348	344	332	000	

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APPENDIX C

ROADLESS AREA EVALUATION

APPENDIX C

ROADLESS AREA EVALUATION

This Appendix contains detailed information and maps for each of the roadless areas on the Custer National Forest included in the roadless area inventory of 1983. The areas fall in the states of Montana and North Dakota and are listed in alphabetical order for each state.

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INTRODUCTION

The Custer National Forest had already begun to develop a Final Forest Plan and EIS when, in September 1983, the NFMA regulations were amended to require each Forest to prepare, using specific criteria, an inventory of roadless lands and to evaluate each of these areas for wilderness in its land and resource planning (Forest Planning) process. The forest planning process had, until that time, assumed that RARE II would resolve wilderness designation of the inventoried roadless lands. Thus wilderness had not been included as a Forest issue. In order to address the revised NFMA regulations, the Forest decided to add an additional issue specifically addressing wilderness and to incorporate an analysis and re-evaluation of the inventoried roadless lands in the forest planning process. This appendix discloses the results of that analysis and any changes made between the draft and final EIS.

Forest planning, as required by NFMA, formulates administrative decisions on long-term use of nonwilderness National Forest lands. If the Forest Service decision is that wilderness is the best use, then that decision becomes a recommendation to Congress for making that land use classification. This appendix describes each roadless area, the resources and values considered, the range of alternative land uses studied, and the effects of management associated with each alternative. Significant effects of alternative assignments for each roadless area are summarized in the following narratives.

BEARTOOTH 01912

	GROSS ACRES	NET ACRES
Custer National Forest	1,280	1,180
Gallatin National Forest	5,040	4,720
	6,320	5,900

I. INTRODUCTION AND DESCRIPTION

The Custer National Forest portion of the area is located north of Daisy Pass, near the Custer/Gallatin Forest bouns northeast of Cooke City, Montana, and extends north and east to the boundaries of the existing Absaroka-Beartooth Wilderness. The area includes two parcels of land that adjoin the wilderness on the north and east. These parcels are separated from each other by about 1 mile of roading and development associated with planned cutting units of the Kersey-Fisher Timber Sales scheduled for 1984. The area is about 130 road miles southwest of Billings, Montana via U.S. 212 and County and Forest roads.

The area is a relatively gentle sloped area of wet alpine meadows and subalpine forest and numerous small lakes. Contrasted to this is the rugged, unvegetated rockland found in the northernmost portion of the area. This northern area has some packets of timber and includes swamps and bogs. Elevation varies from 10,600 atop Sheep Mountain to 8,800 feet on the extreme northwest corner at Goose Creek. The area contains nine small lakes with trout fisheries.

The vegetation of the alpine meadows is various forbs, grasses, sedges and rushes. The trees are subalpine fir with an occasional whitebark pine and spruce. The area is snow free only from mid July to early September most years.

The area provides summer habitat for bighorn sheep, and is classified as Management Situation II grizzly bear habitat.

The Goose Lake road, a primitive 4 x 4 road, crosses the extreme north tip of the area. An unmaintained forest trail traverses the entire length from the southwest/northeast direction.

Most recreation use consists of summer fishing/camping at the lakes with fisheries. One significant feature of the area is Kersey Lake. This 110-acre lake has very good fishing for rainbow and brook trout. It is one of the few lakes in the areas still accessible by motorized vehicles, and is a favorite of the elderly. Limited snowmobiling and cross-country skiing occurs from the Lulu Pass and Goose Lake roads.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

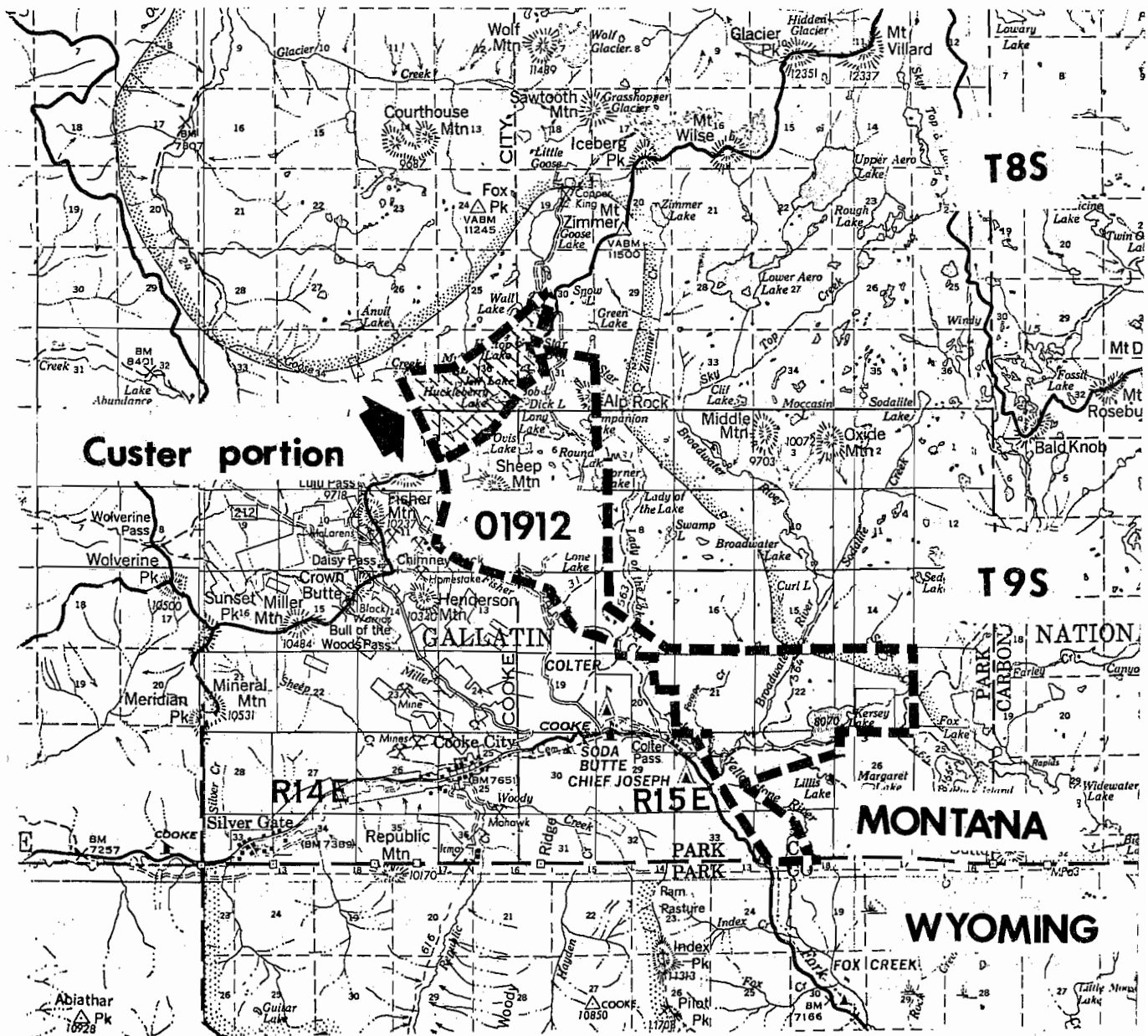
This area meets some wilderness characteristics more successfully than others. Portions of the area reveal evidence of man, but these parts could be separated from the roadless area to leave other parts of the area more suited to wilderness consideration. The northern parts of the area offer wilderness opportunities comparable to the adjoining Absaroka-Beartooth Wilderness.

Natural integrity of the area is affected by several marks of man. The Custer National Forest portion of the area has the intrusion of a road in the northern tip, and a trail traversing the entire length. There are about 100 acres of private lands in the southeastern corner of this part of the area. The eastern portion (Gallatin NF) has a jeep road to Kersey Lake. A cabin at Kersey Lake serves as the office for a rowboat rental service. A 1/4-mile square private inholding just east of Kersey Lake is presently being developed for summer homes. The southwest boundary of area follows but does not include a power transmission line. Four isolated parcels of private land are located within the area.

Some evidence of old mining activity can be found in parts of the area but is more evident in the Long Lake portion. Structures associated with old mining claims are visible from some locations. A jeep road runs the length of the Long Lake segment. This road extends to Goose Lake but presently is closed to the general pulic at the Absaroka-Beartooth Wilderness boundary. Other jeep roads now receiving little or no use are scattered throughout the area dating from the days of more active mining.

b. Natural Appearance

The natural appearance of the area is affected by the man-made developments just noted. In addition, sounds from Highway 212 would be evident in the southwest portion of the Kersey Lake segment where the highway is within 1/4 mile of the boundary.



Beartooth 01912
scale 1/2" = 1 mi.

c. Solitude

Opportunity for solitude in the area varies by site and season of use. If a person would avoid periods of peak use (e.g., hunting season), and avoid the jeep roads, there would be some opportunity to attain solitude. The entire area is grizzly habitat; this could add some element of risk to hiking or similar activities. Climbing Sheep Mountain would pose a degree of challenge and risk.

d. Primitive Recreation Opportunities

The area is small but popular activities include fishing, certain motorized activities such as snowmobiling, and dirt-biking, hiking, hunting, and cross-country skiing.

e. Other Features

The area would be considered to have high scenic values because of the views you see from the area. As previously mentioned, the area is classified as Management Situation II habitat for grizzly bears.

2. Wilderness Manageability

The Beartooth Roadless Area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage are noted below.

Custer National Forest

Gross Acres	Net Acres	
1,280	1,180	RARE II Inventory
0	0	Acres changed

Gallatin National Forest

Gross Acres	Net Acres	
5,040	4,720	RARE II Inventory
0	0	Acres changed
6,320	5,900	1983 Roadless Inventory

A portion of the area is adjacent to a highly mineralized area which produced minerals several years ago. The inholdings are patented minerals claims. The Goose Lake road on the northern tip could be excluded from the area with a minor boundary adjustment. This portion of the area would be difficult to manage as a wilderness because of the inholdings and adjacent minerals activities. The long, shared boundary with the Absaroka-Beartooth would make management of a portion of the area fairly easy. Summer homes being developed in Section 23 of the Kersey Lake segment, along with the road accessing them would make some boundary adjustments necessary. Several parcels of private land west of Sheep Mountain could be excluded from the area through boundary adjustments.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-1
ROADLESS AREA RESOURCE SUMMARY
BEARTOOTH ROADLESS AREA

Area Description: 01912

Value/Resource	Gallatin NF	Custer NF
Gross Acres	5,040	1,280
Net Acres	4,720	1,180
Recreation		
Primitive	0	248
Semi-primitive		
Non-motorized	425	75
Semi-primitive		
Motorized	800	0
Range		
Suitable Ac.	900	0
No. Allotments	0	0
AUM's of Use	0	0
Timber		
Tentatively Suitable	890	0
Standing Volume (MMBF)	7.2	0
Wildlife/Fish		
Winter Range Habitat (Ac.)	0	0
Grizzly Situation I (Ac.)	511	0
*Species Present	E,D,M,GB	E,D,M, GB,BH
Stream Fisheries (Mi.)	1.8	0
Lake Habitat (Ac.)	205	12
Water Developments (No.)	0	0
Locatable Minerals (Potential)		
Very High (Ac.)	3800	0
High (Ac.)	0	590
Moderate (Ac.)	920	590
Low (Ac.)	0	0
Claims & Patents (No.)	16	4
Oil and Gas (Potential)		
Very High (Ac.)	0	0
High (Ac.)	0	0
Moderate (Ac.)	0	0
Low (Ac.)	4,720	1,180
Leased (Ac.)	0	0
Lease Applications (Ac.)	0	0

*Code for wildlife species:

D — Mule Deer	MG — Mtn. Goat
E — Elk	M — Moose
BH — Bighorn Sheep	BE — Bald Eagle
GB — Grizzly Bear	

No commercial livestock grazing presently takes place in the area, but 900 acres of suitable range have been identified.

The area contains 511 acres of grizzly bear habitat classed as Management Situation I; the rest of the area is Management Situation II. The Situation I areas are located in the eastern half of the Kersey Lake segment. The area contains no big game winter range. Populations of elk, mule deer, and moose are found in the area. Some bighorn sheep summer range exists in the northern (Custer) portion of the area. The area also contains five lakes of over 10 acres in size which contain fisheries, plus 1.8 miles of fishing streams.

About 1,120 acres of the area are rated medium for locatable minerals potential, with the

remainder of the area being rated as low. The entire area is rated low for oil/gas potential. The area contains 11 unpatented mining claims and 5 patented claims. Most of the present and past mining activity is located in the Long Lake portion. There are no oil and gas leases or lease applications on record for this area. Resource values for this area are displayed in Table C-1.

C. Management Considerations

There are 420 acres of private lands included within this roadless area. These lands are old mining claims that have been patented over time.

D. Need

The Beartooth Roadless Area is 150 miles from Cody, Wyoming; 135 miles from Bozeman, Montana; and 125 miles from Billings. The area is tangent to the Absaroka-Beartooth Wilderness for about 60 percent of its borders. A spur off the the Kersey Lake segment of the area extends southward to meet roadless Area 2912 on the Shoshone National Forest; this spur is about 1½ miles from the boundary of the North Absaroka Wilderness. The area is about 5 miles from Yellowstone Park, which is proposed for wilderness.

E. Contributions To the National Wilderness System

Essentially, Area 1912 represents proposed annexes or additions to the Absaroka-Beartooth Wilderness. Portions of the area might enhance manageability of the Absaroka-Beartooth, while other portions would be likely to add to management problems.

Habitat types that would be contributed to the National Wilderness System if this area were to become wilderness are all in the alpine fir (ABLA) series. The upper subalpine fir series (ABLA-PIAL/VAS), described as "subalpine fir whitebark pine/grouse whortleberry" is predominant. This is a common habitat type in the area. About 27 percent of the total area of Area 1912 is unvegetated rock, talus, or open water.

F. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received on the Custer National Forest portion of Area 1912, 6 responses referred to the Beartooth Area specifically. Interests expressed about this area focused on roadless or wilderness management to protect the integrity of the adjacent Absaroka-Beartooth Wilderness, and to protect grizzly bear habitat. Some concern for wilderness for this area also focused on the proximity to Yellowstone

National Park. Contrasting this was those who felt that the area should be managed for multiple uses because of the high level of snowmobile use within certain parts of the area. Residents of nearby towns are opposed to a formal wilderness classification.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development, especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana is recreation and tourism. Areas in Montana most commonly mentioned as supported, for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management

concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Allocation By Alternative

Environmental effects on Roadless Area 01912 will vary depending on which of the alternatives are selected for future management of the area. The following tables display the acreage within the Beartooth roadless area that would be managed as developed, nonroaded, and wilderness in the various alternatives.

In Table C-2 the acreages shown in parentheses are the Custer NF portion of the total.

B. Environmental Consequences

1. Designation: Wilderness

Management Emphasis: Wilderness

This prescription allocates the area to remain in a roadless condition, with a recommendation to Congress for inclusion in the Absaroka-Beartooth Wilderness. The Gallatin portion of the Beartooth is allocated to wilderness only in Alternative 9. The Custer National Forest portion of the area is allocated to a wilderness management prescription in Alternatives 1, 4, 5a, and 6b.

The wilderness alternative would change the recreation use that is currently made of the area. All motorized use on the primitive roads and trails would not be allowed. The private land use, especially around Kersey Lake, would be adversely affected by a closure to motorized use.

Oil and gas values, if any, on the areas not currently under lease would be forgone.

Although use of the area is not high, the social effect of it becoming wilderness would be a perception of and actual loss of that use. Public input

TABLE C-2
MANAGEMENT EMPHASIS BY ALTERNATIVE FOR BEARTOOTH AREA 01912

Gallatin/Custer National Forests (Area 01912)

Management Emphasis	Alternatives/Benchmarks										MAX PNV	MIN LVL
	1	2	3	4	5	6	7	8	9	10		
	*(5)	(7)	(1)	(2)	(3)	(4)	(6,10)	(5a)	(6b)	(9)		
	Thousands of Acres											
Developed												
Timber	1.0	0.8	0	0	1.0	0	0	0.8	0	0	1.0	0
Dispersed Rec/Roaded	0	0	0	0	0	0	0	0	0	0	0	0
Big Game	0	0	0	0.8	0	0	1.0	0	0	1.0	0	0
Nonroaded												
Dispersed Rec/Nonroaded	0		1.0	0	0	0	0	0	0	0	0	0
Dispersed Rec/Wildlife	3.7	3.9	3.7	3.9	3.7	4.7	4.9	3.9	0	3.7	3.7	0
		(1.2)		(1.2)	(1.2)		(1.2)			(1.2)	(1.2)	
Livestock Range	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Level	0	0	0	0	0	0	0	0	0	0	0	4.7
												(1.2)
Wilderness									4.7			
	(1.2)	0	(1.2)	0	0	(1.2)	0	(1.2)	(1.2)	0	0	0
SUMMARY												
Developed												
Decade 1	1.0	.8		.8	1.0		1.0	.8		1.0	1.0	
Decade 2	1.0	1.0		.8	1.0		1.0	.8		1.0	1.0	
Roadless												
Decade 1	3.7	3.9	4.7	3.9	3.7	4.7	3.7	3.9		3.7	3.7	4.7
		(1.2)		(1.2)	(1.2)		(1.2)			(1.2)	(1.2)	(1.2)
Decade 2	3.7	3.7	4.7	3.9	3.7	4.7	3.7	3.9		3.7	3.7	4.7
		(1.2)		(1.2)	(1.2)		(1.2)			(1.2)	(1.2)	(1.2)
Wilderness									4.7			
	(1.2)		(1.2)			(1.2)		(1.2)	(1.2)			
TOTAL ACREAGE	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9

from local residents has been overwhelmingly in favor of keeping the area out of wilderness. Because it contains several hard rock mining claims and patents it would be very difficult to manage as wilderness. If any of these claims were developed, the wilderness character would be diminished.

Nonpriced values would be affected as follows:

- Grizzly bear security would be increased in this alternative.
 - Other wildlife habitat would be maintained.
 - Visual quality would continue as it exists today.
 - It would be more difficult to develop mining claims.
 - Acres in the National Wilderness System would be increased.
2. Designation: Nonwilderness
Management Emphasis: Nonroaded
Management Prescriptions: Minimum management, dispersed recreation/wildlife, and dispersed recreation nonroaded.

The majority of the Beartooth in all alternatives is allocated to wilderness or roadless management. Alternatives 2, 5, 6, 7 and 10 allocate at least 85 percent to roadless emphasis. In the analysis done on the Custer National Forest portion of the area, the entire area was allocated to a minimum management prescription in Alternative 8. This kind of emphasis would essentially keep the area and its uses as they are today. Motorized uses would continue. If access were needed for mining or oil and gas exploration, it could be granted. The lakes would continue to be easily accessible.

Management under this alternative would favor the grizzly bear and recreation where it was compatible with the recovery of the grizzly. Some mitigation might be needed in the future, if recreation increased dramatically. However, an increase within this area is not envisioned. Hunting and

fishing would continue to be the main use of the area.

The roadless resource as it now exists would be maintained, even though the primitive roads would continue to be used.

Nonpriced values would be affected as follows:

- Grizzly bear security would be monitored.
 - Existing visual quality would remain.
 - Recreation diversity would be maintained.
 - The area would be available for minerals, oil and gas exploration and development.
3. Designation: Nonwilderness
Management Emphasis: Roaded
Management Prescriptions:
Timber/Wildlife (Big Game)

The most that any alternative allocates to these roaded prescriptions is 1000 acres or 17 percent in Alternative 1. Alternatives 2, 5, and 8 allocate slightly less to timber harvest. Under this alternative, the standing timber volume of 7.2 MMBF would be harvested over the next several years and managed for future timber production. This would contribute only slightly to the Gallatin National Forest's annual harvest, but could provide some lumber to the small local mill in Cooke City.

On those portions of the roadless area that are harvested and roaded, the wilderness character would be lost. Because of the relatively flat terrain, timber harvest would not decrease the visual quality. Some mitigation, such as the way sales are laid out, could reduce the amount of clearcut areas that would be visible from roads and trails.

Non priced values would be affected as follows:

- Some habitat diversity would be created.
- The roadless resource would be reduced.
- Minerals development would be easier.
- Grizzly bear security might be reduced.

BLACK BUTTE 01368

GROSS ACRES — 880

NET ACRES — 880

I. INTRODUCTION AND DESCRIPTION

This area is located on the northeast face of Black Butte. Black Butte is on the divide between East and West Rosebud Creeks, some 6 air miles south of Roscoe, Montana. The area is about 90 miles southwest of Billings, via U.S. 212, State Highway 78, and County and Forest roads. The area is bounded by the Absaroka-Beartooth Wilderness on the west, and by a combination of private lands and the Forest boundary on the south, east, and north sides. There are public roads near the unit, but access is limited to fording East Rosebud Creek and hiking about 1 mile, or hiking 4 miles along the west side of East Rosebud Creek from the East Rosebud road.

Elevation varies from 5,400 feet on East Rosebud Creek to 7,400 feet on the ridge north of Black Butte summit. The western portion of the area is very steep rock outcrop forest and rock talus, whereas the east and north portions are foothill grasslands, with patches of lodgepole pine and aspen in the east-facing draws.

The area is a component of the foothills—grass and aspen—which flank the Beartooth Mountains. The mountains, canyons and plateaus dominate the landscape.

Present use consists almost entirely of fall big game hunting when access across private lands can be acquired. Some horseback riding occurs from residents of the Black Butte subdivision on East Rosebud Creek. Access within the area is good because of the open grassy slopes.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

There are several range fences within the unit, and one powerline crosses the area in the extreme southern tip on the east side. Subdivision of private property adjacent to the unit gives the impression of intrusion. Old wheel tracks can be found on the open grassy slopes. Time and fence removal would lessen the impacts, and a minor boundary adjustment could eliminate the powerline and powerline service road.

b. Natural Appearance

The major portion of the area has retained its natural appearance, and the near lack of use in recent years has allowed old scars to heal.

c. Solitude

This area is only 1½ miles long by 1 mile at its widest point, and offers little opportunity for solitude.

d. Primitive Recreation Opportunity

Other than in steepness, the area does not offer a challenge to the visitor. There are several springs but no lakes in the unit. The opportunity for backpack camping exists, but in full view of the developed area to the north. There are no trails through the unit and no general public access to the unit.

e. Other Features

The area contains no habitat that supports any threatened and/or endangered species, nor does it offer any unique geologic, scenic, or other attracting features.

2. Wilderness Manageability and Boundaries

The Black Butte Roadless Area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

Gross Acres	Net Acres	
880	880	RARE II Inventory (as a portion of area 1366)
880	880	1983 Roadless Inventory

The boundaries of this unit are not easily defined, except for the east side which follows a section line. The south, north, and west side, which is the wilderness boundary, are cross-country lines not easily definable on the ground. There are several minor adjustments necessary to eliminate improvements such as powerlines, two-track roads, and fences. The area is adjacent to a rural second home subdivision. Because of this, the area would be difficult to manage as wilderness and offer the elements of a wilderness experience. There are no private lands within this area.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resources.

The area provides 800 acres of summer habitat for deer. The extreme east and northeast sides are used for winter habitat in winters with light snow cover. The aspect of the unit is north and east with very little solar warming in the winter. The area has no fishery, nor any known habitat for threatened or endangered species.

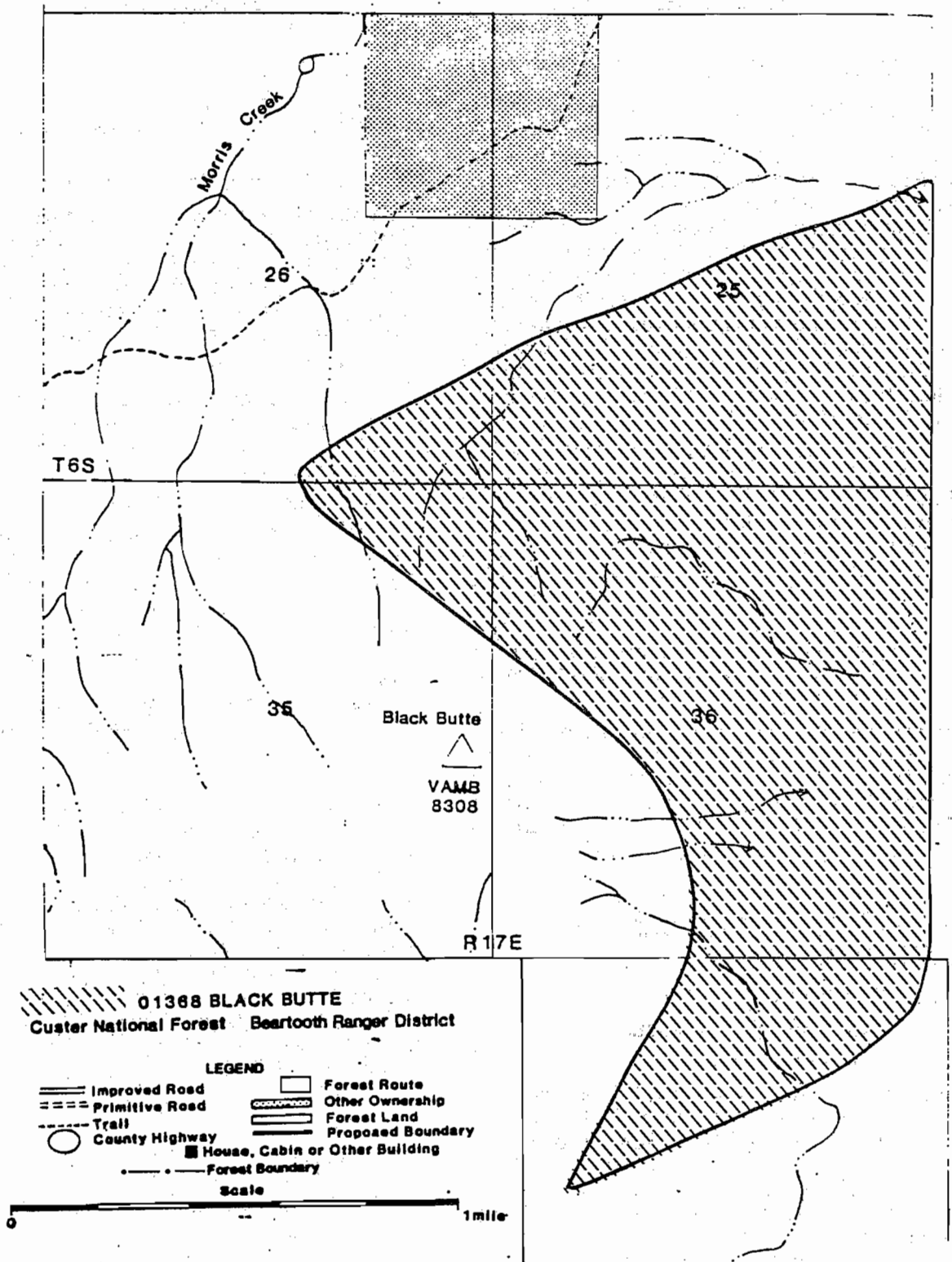


TABLE C-3
ROADLESS AREA RESOURCE SUMMARY
BLACK BUTTE ROADLESS AREA

Area Description: 01368
 Gross Acres: 880
 Net Acres: 880

Description	Units	Value
Recreation		
Primitive	RVD's	50
SPNM	RVD's	0
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	0
Allotments	# of	2
AUM's	AUM's	0
Existing Vacant		
Suitable	Acres	220
Allotments	# of	1
AUM's	AUM's	40
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	20
Standing Volume	MBF	120
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	800
Winter Habitat	Acres	80
Specific — Elk		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Deer		
Summer Habitat	Acres	800
Winter Habitat	Acres	80
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0
Significant Fisheries		
Stream Miles	Miles	.5
Stream Habitat	Acres	1.0
Lakes	# of	0
Lake Habitat	Acres	0
Water Developments		
Existing	# of	0
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	880
Low	Acres	0

Description	Units	Value
Mining Claims	# of	29
Oil and Gas Potential		
Very High	Acres	0
High	Acres	880
Moderate	Acres	0
Low	Acres	0
Oil and Gas Leases		
Leases	# of	2
Leased Area	Acres	640

The area has 20 acres of suitable timber acres, with an estimated standing timber volume of 120 thousand board feet. There is very limited opportunity to utilize any of this timber for any consumptive purpose.

There are 220 acres of grass ecosystem on this unit that historically were grazed by domestic livestock in the Black Butte allotment, and by Forest Service horses in recent years in conjunction with other Forest System lands north of the roadless area. This 220 acres has the potential to produce 40 animal unit months of grazing. Portions of two active livestock grazing allotments are within the area on the extreme southern end and western end. There is local interest in restocking the Black Butte allotment.

There are no mineral resource activities operating in the unit at this time. The area is leased for oil and gas exploration and development with a moderate potential for discovery. The area is considered to have a low potential for hardrock minerals and there are no claims in the area.

The area currently receives 50 recreational visitor days (RVD's) of use annually, but has the potential to accommodate 150 RVD's. This use is primarily fall big game hunting.

The area contains no known cultural resources, but there is a potential for this resource along East Rosebud Creek in the southeastern portion of the unit.

C. Management Considerations

Several range fences within the area, a power line crossing the extreme southern tip, and certain private lands adjacent to this unit present management aspects that must be addressed.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a 2-hour drive from population centers in North and South Dakota. It is approximately 90 miles southwest of Billings, Montana, which is the largest city near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

**REGIONAL POPULATION CENTERS* AND
PROXIMITY TO ROADLESS AREAS ON
THE CUSTER NATIONAL FOREST**

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

**CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST**

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (areas)	Ashland (areas)	Grasslands (areas)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443			
Gospel Hump	Central Idaho	1089238			
River of No Return	Central Idaho	206000	250	425	550
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200

**Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest**

		Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles				
	No. of Areas	4	0	0
	No. of Acres	897200	0	0
Wilderness Within 101-200 Miles				
	No. of Areas	3	5	1
	No. of Acres	742200	2525900	10700
Wilderness Within 201-300 Miles				
	No. of Areas	11	2	0
	No. of Acres	5482381	584300	0

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest wilderness area is the Absaroka-Beartooth Wilderness located immediately adjacent to this area.

E. Contribution to the National Wilderness Preservation System

There are no vegetative habitat types, plant or animal species, geologic types known to exist in this area that are not currently represented in existing wilderness areas. The main contribution to the National Wilderness System would be the enlargement of the adjacent Absaroka-Beartooth Wilderness.

F. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 4 responses referred to the Black Butte Area specifically. Interests expressed about this area focused on roadless management for the security and integrity on the adjacent wilderness, and for maximum expansion of the adjacent wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this

part of the next ten year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want". Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternatives

Table C-4 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness
Management Prescription: Wilderness

This area is allocated totally to a wilderness prescription in Alternatives 1, 4, 5a, 6b, and 7b.

Since a major portion of the roadless area is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Some stipulation requirements within the two leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics under the recommended wilderness management emphasis are limited to honoring the existing leases until they expire. If no discovery was made, then the area could be withdrawn. If production was established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area. The existing leases could also be re-

TABLE C-4
MANAGEMENT EMPHASIS BY ALTERNATIVE
BLACK BUTTE ROADLESS AREA 1368

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE															
	Alternative															
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9 PA 10
Wilderness	880			880		880					880			880		
Minimum Level (Roadless Mgmt)															880	
Minerals		96	223													
Recreation/Wildlife Roadless Mgmt.*		784	657		880		880	880	880	880		880	880			880 880
Summary of Management Emphasis:																
Roaded																
Decade 1		96	223													
Decade 5		96	223													
Roadless																
Decade 1		784	657		880		880	880	880	880		880	880		880	880 880
Decade 5		784	657		880		880	880	880	880		880	880		880	880 880
Wilderness	880			880		880					880			880		

purchased through Congressional initiative, or it might be possible to negotiate with the leaseholders to relinquish the leases of all or part of the area.

A wilderness prescription could enhance the area's natural attributes by reducing and or eliminating existing or potential uses and facilities. No future construction of roads would be permitted. The harvest of the existing timber volume, estimated to be approximately 120 mbf, would be forgone.

Livestock grazing does not currently occur within the area; therefore, no adverse impacts are anticipated.

Wildlife habitat would not be significantly affected under a wilderness prescription unless livestock grazing was begun. Possible disturbance to wildlife from human activity would be eliminated due to the elimination of motorized traffic, although hunting would still be allowed. Wildlife habitat would change primarily through natural ecological succession.

A wilderness prescription would affect the future minerals management program on the area. Mineral leases would not be reissued and existing leases would be allowed to expire unless developed prior to expiration.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

The nonpriced benefits affected are as follows:

- Existing visual quality would be maintained.
- Security for big game would increase.
- Increase in acres in the National Wilderness System.

- The recreational opportunity setting would change from semi-primitive, non-motorized to primitive.
- Current high levels of air, soil, and water quality would be maintained.

The local economy has a strong reliance on recreation and tourism. The on-site use of this area is very minor in the total economic spectrum. People come to view the area, the scenery and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area.

An oil and gas discovery could have significant effects on the local and area economy.

2. Designation: Nonwilderness
 Management Prescription: Minimum Level

In Alternative 8 this area is designated to this management prescription. Custodial management would be the theme of this management prescription. The area would remain roadless and undeveloped with no management induced outputs occurring. There would be no timber harvested, or new mineral leases issued. Recreation would be allowed to occur but no new uses would be developed. Wildlife habitat would be left to occur naturally.

This allocation would not affect the wilderness qualities and attributes of the area since it would in all likelihood remain in a roadless condition.

Timber harvest would not take place. Although a small part of two grazing allotments are within this area, grazing does not currently occur.

Wildlife in general would benefit from the lack of resource development activity.

Nonpriced values would be affected as follows:

- Wildlife habitat values would increase slightly over time.
- Visual quality would continue as a natural landscape.
- Dispersed recreation opportunity setting would continue as semi-primitive, non-motorized.
- Although no acres would be added to the National Wilderness System, little or no wilderness attributes would be forgone.

The local economy has a strong reliance on recreation and tourism. The on-site use of this area is very minor in the total economic spectrum. People come to view the area, the scenery and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area. The local economic use of the area is more for outfitters and guides during the fall season. This classification would enhance their operations.

3. Designation: Nonwilderness Management prescription: Recreation/Wildlife/Roadless

Portions of the area are designated to this prescription except in Alternatives 1, 4, 5a, 6b, and 7b. The entire area is designated to this management prescription in Alternative 10 (the Proposed Action).

Under this prescription the area would remain essentially as it is today unless the minerals (oil and gas) were developed. The area would remain roadless or undeveloped and dispersed recreation and wildlife habitat values would be emphasized in management.

The wilderness character of the area would be retained under this management allocation, although no additional acres would be recommended for inclusion in the National Wilderness System. The existing two oil and gas leases would have to be honored. Any development activity from oil and gas would be obliterated when no longer needed and the area returned to a near natural condition.

This allocation would have no effect on timber harvest or livestock grazing since these activities do not presently occur on the area.

Wildlife values would be maintained at current levels or perhaps enhanced slightly over time.

As previously stated, the two existing leases would have to be honored if the lessee desired to

develop the lease. If these leases expired without production being established, they would not be renewed. New leases would not be issued.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at the current level.
- Water quality would be maintained at the current level.
- Soil and air quality would be maintained at current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would increase slightly in use.
- No wilderness attributes will be forgone, although no additional acres would be added to the National Wilderness System.

There would be no social or economic effects on current conditions.

4. Designation: Nonwilderness Management Prescription: Minerals

This prescription is applied to parts of the area in Alternatives 2 and 3. Alternative 2 allocates 96 acres (11 percent), while Alternative 3 allocates 223 acres (25 percent) of the area to this prescription.

This prescription is designed to allow or encourage oil and gas production. It is recognized that a managed loss of some other resources may occur in the process. These losses will be minimized because of preplanning of the oil and gas development, and planned mitigation measures. Roading and development would occur in at least portions of the area. These access roads may cross areas of other allocations or prescriptions in order to reach drill sites. The main roads would become part of the permanent Forest Transportation System. Other roads would be closed and rehabilitated upon termination of oil and gas need for the road.

Roading and development of the area would forgo any future wilderness classification of the area.

Although there is very limited timber resources within the area, roading of the area would increase the ability to provide firewood to local residents. Grazing values may increase due to roading.

Oil and gas values, if any, would be realized.

Nonpriced values would be affected as follows:

- Wildlife habitat value and security would decrease.
- Water quality would slightly decrease over time.
- Soil and air quality would decrease slightly over time.

- Visual quality would slightly decrease as development occurs.
- Dispersed recreation would increase moderately as development occurs.
- Wilderness attributes may be lost or portions of the area treated by the prescription where roading is involved.
- The recreation opportunity setting would be changed from semi-primitive, non-motorized to roaded natural appearing.

There could be significant economic benefits from employment and purchases if oil is discovered. There will also be tax and fee benefits. Roads may be constructed to access previously inaccessible areas. This could be beneficial to many of the National Forest users, but detract from some local interests who have enjoyed restricted access to the areas. The cost of maintenance and administration of the area would increase.

BURNT MOUNTAIN 01364

GROSS ACRES — 9,320

NET ACRES — 9,320

I. INTRODUCTION AND DESCRIPTION

Lying just west of the Red Lodge Mountain-Grizzly Peak Ski Area is the Burnt Mountain Roadless Area. This area is situated approximately 8 miles west of Red Lodge, Montana, and approximately 70 miles southwest of Billings, Montana. Access is by U.S. Highway 212 and Forest Service System roads. This area encompasses the area south and west of Grizzly Peak, Nichols Peak, and Burnt Mountain. To the west the area is bounded by the Absaroka-Beartooth Wilderness. The southern boundary extends along the West Fork of Rock Creek road to Dutch Creek and then north to Grizzly Peak and Nichols Peak. The northern boundary cuts west to Burnt Mountain and then joins the Absaroka-Wilderness at the West Fork of Red Lodge Creek. This creates a rectangular block some 4 miles by 2½ miles, oriented east-west along the divide between the West Fork of Rock Creek and Red Lodge Creek.

Elevation varies from 9,400 feet atop Grizzly Peak to 6,500 feet in the vicinity of West Red Lodge Creek. The area is best described as being "tent-shaped" with the northern portion being a north-facing slope and the southern portion being a south-facing slope. At the lower elevations the dominate tree species are lodgepole pine and Douglas-fir with some interspersions of spruce. At the higher elevations alpine fir dominates with scattered patches of aspen located along the various creeks and drainages. The southern portion is a somewhat warmer site and here lodgepole pine dominates. The southern portion was totally burned over by a fire in the 1880's, and is covered by a stand of even-aged, pole-size lodgepole pine. At the higher elevations lodgepole pine gives way to whitebark pine. Drainage of the area is into either the West Fork of Rock Creek to the south or Red Lodge Creek to the north.

The area is important as summer range for elk, deer and, to a lesser extent, moose.

Present use of the area is very light. Although the area is adjacent to a Forest System Road, access within the area is poor due to the lack of developed trails and steep terrain. The Lone Trail which accesses the area is in Washoe Creek, and originates at the Timbercrest Girl Scout Camp. This trail is actually an old horse logging road from the 1900-1910 era. There are very deteriorated remnants of horse logging camps in the area.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

This roadless area has very few man-made intrusions. A very small portion of Blacktail Creek was horse-logged in the early 1900's and some of the scars are still faintly visible. The effect of human activity in the area as a whole is very minor, and natural integrity is very high throughout the area. Red Lodge Mountain Ski Area improvements and the Grizzly Peak electronics site are located on Grizzly Peak, and some of these improvements are on the West Fork side of Grizzly Peak.

b. Natural Appearance

The appearance of this area has been influenced by natural processes with very little impact by man. Evidence of logging skid trails and roads can be found in Dutch Creek and Washoe Creek, but the roads and trails now have young trees growing in the tracks.

c. Solitude

There are some off-site intrusions, mostly in the form of roads and human development penetrating the area. Opportunities for solitude is limited due to the overall size of the area and lack of vegetative and topographic screening in the northern portion. The area essentially has no trails or specific access points. The 1 mile of trail is on the northern boundary of the area.

d. Primitive Recreation Opportunities

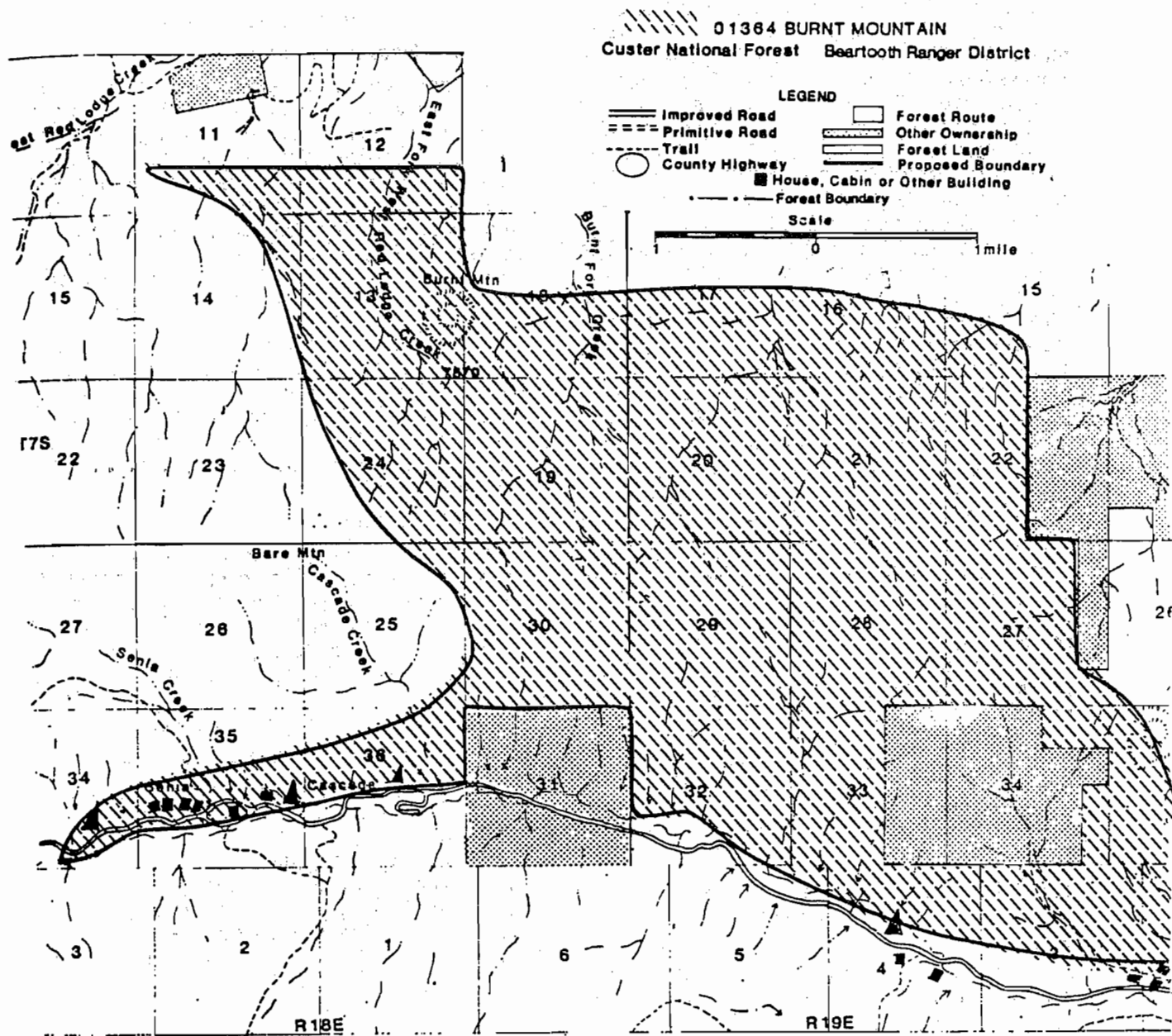
There is a moderate potential for primitive recreation opportunities within this roadless area. The area does not possess a large diversity in topography, nor does it possess any major destination points. Access into and through the area is poor. The area does possess some extremely steep and rugged terrain. From the divide ridge, one can see into the Silver Run Mountain area of the Absaroka-Beartooth Wilderness.

e. Other Features

The area contains no habitat that supports any threatened and/or endangered species, nor does it offer any unique geologic, scenic, or other attracting features.

2. Wilderness Manageability and Boundaries

This area was originally a part of Roadless Area 1363, but was isolated by creation of the



Absaroka-Beartooth Wilderness in 1978. Further adjustments were made possible by the 1982 acquisition of 800 acres of private lands in the Washoe Creek drainage.

Gross Acres	Net Acres	
9,320	9,320	RARE II Inventory
9,320	9,320	1983 Roadless Inventory

With minor modifications of the boundary along the West Fork of Rock Creek and in the Grizzly Peak area to remove ski area developments and one electronics site, the area could be managed as a wilderness and enlarge the adjacent Absaroka-Beartooth Wilderness. The northeastern boundary would be adjacent to the Cole Creek area planned for development by Red Lodge Mountain Ski Area, and that area is now under permit to Red Lodge Mountain.

The area contains a well-defined boundary on the south, paralleling the West Fork of Rock Creek Road. The east and north boundaries are difficult to define as they are not set on well-defined topographic features.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

The area provides 9,320 acres of summer habitat for elk and deer. The winter range for these species is located north of this area at lower elevations. This area does not contain any significant lake or stream fisheries, nor does it contain any habitat which supports threatened and or endangered species.

Grazing of domestic livestock is nonexistent on the area. Very small parts of two allotments are included in this area with no suitable range inside the roadless area.

Suitable timber acres are estimated to be approximately 3,200 and tend to be located in the northwest corner of the area with some acreage located along the southern boundary next to the West Fork of Rock Creek. The present estimated standing timber volume is 10.4 MMBF.

TABLE C-5
ROADLESS AREA RESOURCE SUMMARY
BURNT MOUNTAIN ROADLESS AREA

Area Description: 01364
Gross Acres: 9,320
Net Acres: 9,320

Description	Units	Value
Recreation		
Primitive	RVD's	200
SPNM	RVD's	300
SPM	RVD's	0
Roaded Natural	RVD's	0

Description	Units	Value
Range		
Existing Obligated		
Suitable	Acres	0
Allotments	# of	2
AUM's	AUM's	0
Existing Vacant		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	3,176
Standing Volume	MBF	10,400
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	9,320
Winter Habitat	Acres	0
Specific — Elk		
Summer Habitat	Acres	3,560
Winter Habitat	Acres	0
Specific — Deer		
Summer Habitat	Acres	5,760
Winter Habitat	Acres	0
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0
Significant Fisheries		
Stream Miles	Miles	0
Stream Habitat	Acres	0
Lakes	# of	0
Lake Habitat	Acres	0
Water Developments		
Existing	# of	0
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	0
Low	Acres	9,320
Mining Claims	# of	0
Oil and Gas Potential		
Very High	Acres	0
High	Acres	5,448
Moderate	Acres	3,872
Low	Acres	0
Oil and Gas Leases		
Leases	# of	10
Leased Area	Acres	8,765

The area is rated as having a low potential for hardrock minerals. There are no mining claims presently located within the area. The area is rated as having a moderate to high potential for oil and gas. Presently, 10 leases have been issued covering approximately 8,800 acres of the area.

This area produces approximately 500 recreational visitors days (RVD's) annually, but has an existing capacity to produce 2,500 RVD's annually. Present use is very light due to rugged terrain and the lack of any prime destination spot within the area. The area receives most of its use from day hikes by groups from the Girl Scout Camp. The potable water system for the Scout Camp originates in Washoe Creek. Two recreation residences take their domestic water from Dutch Creek.

C. Management Considerations

There are no private inholdings within the interior of this area.

The southern portion of this area drains into the West Fork Rock Creek. The West Fork Rock Creek has been designated as a Municipal Watershed for the town of Red Lodge, Montana. Management activities and resource allocations must consider this designation.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a 2-hour drive from population centers in Montana and South Dakota. It is approximately 70 miles southwest of Billings, Montana, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. This area borders the existing Absaroka-Beartooth Wilderness Area.

E. Contribution to the National Wilderness Preservation System

There are no vegetative habitat types, plant or animal species, or geologic types known to exist in this area that are not currently represented in existing wilderness areas. Albeit small, the addition of this area to the national wilderness system would provide some additional capacity for primitive recreation.

F. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 4 responses referred to the Burnt Mountain Area specifically. Interests expressed about this area focused on roadless management for the security of the wilderness, or to add to the existing wilderness considering the implications of outstanding rights.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (acres)	Ashland (acres)	Grasslands (acres)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200

Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest					
		Beartooth	Ashland	Grasslands	
Wilderness Within 100 Miles					
No. of Areas	4	0	0	0	
No. of Acres	897200	0	0	0	
Wilderness Within 101-200 Miles					
No. of Areas	3	5	1		
No. of Acres	742200	2525900	10700		
Wilderness Within 201-300 Miles					
No. of Areas	11	2	0		
No. of Acres	5482381	584300	0		

development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana, is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternatives

Table C-6 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness
Management Prescription: Wilderness

This prescription applies to the total area in Alternatives 1, 4, 6b, and 7b. Additionally, parts of the area are allocated to wilderness in Alternative 5a, (5,478 acres), Alternative 6 (4,200 acres), and Alternative 10 (the Proposed Action) (4,200 acres).

Under this prescription, the area would be managed as wilderness, with due consideration for the existing oil and gas leases. Hardrock mineral exploration would be allowed within existing laws and regulations. No other uses or activities would be permitted which would detract from the wilderness resource.

A wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing or potential uses and facilities that would detract from the wilderness character of the area. No future roads would be permitted unless necessary to honor existing oil and gas leases.

Since most of the roadless area is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur.

Some stipulation requirements within the ten existing leases do serve to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics under the recommended wilderness management emphasis are limited to honoring the existing leases until they expire. If no discovery is made, then the roadless area could be withdrawn. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area. Another option for management of existing leases would be to re-purchase the leases through a Congressional initiative. As a third option, it might be possible to negotiate with the leaseholders to relinquish the leases of all or parts of the area.

The timber consisting of approximately 10.5 mmbf standing volume would be forgone.

The grazing of domestic livestock would continue at or near present levels under this type of allocation. Since there are approximately 100 acres of suitable range, the impacts to grazing would be insignificant. No range improvements will be necessary to continue present use levels.

A wilderness prescription would affect the future minerals management program on the area. Mineral leases would not be reissued and existing leases would be allowed to expire unless developed prior to expiration.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Wildlife habitat would not be significantly affected under a wilderness prescription unless livestock numbers were significantly reduced.

TABLE C-6
MANAGEMENT EMPHASIS BY ALTERNATIVE
BURNT MOUNTAIN ROADLESS AREA 1364

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE															
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9 PA 10
Wilderness	9320			9320		5478			4200		9320			9320		4200
Minimum Level (Roadless Mgmt)							1548								3597	
Recreation/Wildlife Roadless		9320	8003		9320	3842	7772	9320	3803	7945		9320	7520		5723	8003 3803
Timber Mgmt.			1317						1317	1375			1800			1317 1317
Summary of Management Emphasis:																
Roaded																
Decade 1			1317						1317	1375			1800			1317 1317
Decade 5			1317						1317	1375			1800			1317 1317
Roadless																
Decade 1		9320	8003		9320	3842	9320	9320	3803	7945		9320	7520		9320	8003 3803
Decade 5		9320	8003		9320	3842	9320	9320	3803	7945		9320	7520		9320	8003 3803
Wilderness	9320			9320		5478			4200		9320			9320		4200

Possible disturbance to wildlife from human activity would be eliminated due to the elimination of possible motorized traffic, although hunting would still be allowed. Wildlife habitat would change primarily through natural ecological succession.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at current or slightly above current levels.
- Water quality would be maintained at the current level.
- Soil and air would be maintained at the current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would slightly increase in use.
- No wilderness attributes will be forgone. Acres in the National Wilderness System would be increased.

The local economy has a strong reliance on recreation and tourism. The on-site use of this area is very minor in the total economic spectrum. People come to view the scenery and the big game on winter ranges, but seldom ever actually set foot upon the area except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area.

Any oil and gas discovery could have significant effects on the local and area economy.

2. Designation: Nonwilderness Management Prescription: Minimum Level

Portions of the area are allocated to this prescription in Alternative 5b (1,548 acres) and Alternative 8 (3,597 acres). Custodial management would be the theme of the management prescription. The area would remain roadless and undeveloped subject to existing oil and gas leases. There would be no timber harvested or new mineral leases issued. Recreation would be allowed to occur but no new uses would be developed. Wildlife habitat would be left to occur naturally.

This allocation would not affect the wilderness qualities and attributes of the area since it would in all likelihood remain in a roadless condition.

Timber would not be harvested. The value associated with the standing volume of 10.5 mmbf would be forgone.

There would be no impacts on the very limited livestock grazing now occurring on the area.

Wildlife in general will benefit from the lack of development.

Dispersed recreation will remain at current levels.

Existing oil and gas leases would have to be honored. If production was not established prior to the expiration of current leases, then they would not be reissued and the area would be withdrawn.

Nonpriced values would be affected as follows:

- Wildlife habitat would remain at or near current levels.
- Water quality would increase slightly over time.
- Soil and air quality would remain at or near current levels.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would remain at or near current levels.
- No wilderness attributes will be forgone with this prescription.
- No acres would be added to the National Wilderness System.

There would be no noticeable social or economic effects from this prescription unless oil and gas was discovered and produced from the area.

3. Designation: Nonwilderness Management Prescription: Recreation/Wildlife/Roadless

All or portions of the area are allocated to this prescription except in Alternatives 1, 4, 6b, and 7b. Varying amounts of the area are allocated in the other alternatives. Alternative 10 (the Proposed Action) allocates the least amount (3,803 acres or 40 percent) while Alternatives 2, 5, 5c, and 7 allocate the entire area.

Under this prescription, the area would remain essentially as it is today. The area would remain roadless or undeveloped (subject to existing mineral leases) and dispersed recreation and wildlife habitat values would be emphasized in management.

The wilderness character of the area would be retained under this management allocation, although no additional acres would be recommended for inclusion in the National Wilderness System. The existing oil and gas leases (10) would have to be honored.

Limited timber values will be realized.

Limited domestic livestock grazing is permitted on the area. This allocation would have no impacts on this resource.

Wildlife values would be maintained at current levels or perhaps enhanced slightly over time.

If existing oil and gas leases expired without development they would not be reissued. New leases would not be issued.

Recreation values would increase slightly over time.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at the current level.
- Water quality would be maintained at current level.
- Soil and air quality would be maintained at the current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would increase slightly in use.
- No wilderness attributes will be forgone with this prescription.
- No additional acres would be added to the National Wilderness System.

There would be no significant social or economic effects, but perhaps an increase in values, if wildlife habitat and game populations increase.

4. Designation: Nonwilderness Management Prescription: Timber

This prescription is applied to 19 percent of the area in Alternative 7a; to 14 percent in alternatives 3, 6, 6a, 9 and 10 (the Proposed Action).

This prescription emphasizes timber harvest to protect and maintain the timber resource values as well as other resources values. Timber would be harvested on a sustained-yield basis. Rooding and development would occur, and the main roads would become a part of the Forest Transportation System. Other roads constructed would be open only until the timber harvest is complete, then closed to public use.

The wilderness values on portions of the area would be forgone.

Oil and gas values, if any, could be realized.

Very limited domestic livestock is now permitted on the area. This could possibly be increased with the creation of transitory range through timber harvest.

Some wildlife habitat value may be increased through timber harvest although wildlife security may be adversely impacted through rooding.

Nonpriced values would be affected as follows:

- Wildlife habitat would decline slightly.
- Water quality would decrease slightly over time.
- Soil and air quality would decrease slightly over time.
- Visual quality would decrease slightly as development occurs.
- Dispersed recreation would slightly increase in use.
- Wilderness attributes will be lost on portions of the areas treated by this prescription.
- The recreation opportunity setting would change from semi-primitive, non-motorized to rooded natural appearing.

The harvest of trees for sawlogs, house logs, posts, poles, and fuel will meet a local demand. Most cutting is done by individuals for themselves rather than commercial cutting. Local employment and suppliers will benefit, but to a limited degree. Local ranchers and others who purchase boards and timber from local mills will benefit, but the amount of product is minimal to the area's annual consumption. The suitable timber acres on the area is minimal and of minor significance in the long term. Without timber harvest, and associated road construction, the area would not be available for fuelwood collection for local residents.

COOK MOUNTAIN 01370

GROSS ACRES — 11,700

NET ACRES — 11,700

I. INTRODUCTION AND DESCRIPTION

The Cook Mountain area is located in the extreme northwestern corner of Powder River County, Montana. The area is situated approximately 60 miles south of Miles City, Montana, and about 125 miles southeast of Billings, Montana. Access is via U.S. Highway 212 and then by Forest System roads. The area is bounded by private land to the north and west. The main Cook Mountain Divide which runs east to west forms the southern boundary of the area. The east boundary of the unit is the Ash Creek Road.

Elevation varies from 4,400 feet atop the Cook Mountain Divide to 3,400 feet at the lower elevations in the northern end of the area. For the most part, the area is somewhat gentle north-facing slopes. It is dissected by many small draws that drain into the major drainages of Ash Creek, Cottonwood Creek, Bringoff Draw, and Coulbert Coulee. While the draws and creeks are ephemeral, there are springs located in these areas that are perennial. Drainage is into the Tongue River.

Topography of the area varies from somewhat steep, timbered slopes along the Cook Mountain Divide to gentle, open slopes and grasslands in the north end. Timbered ridges are long, stretching south to north, finally fading into open grassland.

The major part of the area is characterized by the ponderosa pine/sedge ecosystem. The understory of this ecosystem includes various grasses, forbs, and sedges. The timbered ecosystem gives way to open grasslands in the north. The draws are characterized by occasional hardwoods such as green ash and various shrubs, grasses, and forbs.

The area is important for the grazing of domestic livestock, as well as providing summer and winter habitat for wildlife. The area is also important from a mineral standpoint. Approximately 4,800 acres have been leased for the exploration and development of oil and gas, however, no current mineral activity is taking place. The area has limited access which has resulted in light use by recreationists.

Present use of the area is predominantly cattle grazing, and seasonal use by hunters and recreationists. The area is undeveloped except for range improvements such as springs, wells with windmills, and dams.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

Ecological processes and the natural landscape in parts of the area have been disrupted to a certain extent by domestic grazing and the range improvements necessary for the management of livestock. Allotment boundary fences, spring developments, and several wells are visible from parts of the area. Although these developments do impact the natural integrity of the area, long-term ecological processes have not been appreciably altered.

There are some offsite intrusions in the form of roads and agricultural developments. From certain vantage points within the area, power generating facilities at Colstrip, Montana, are visible.

b. Natural Appearance

Although the naturalness has been impacted to a degree, the roadless area retains a natural appearance representative of the Black Hills Ponderosa Pine and associated grassland areas. Visitors to the area would feel that the greater portion maintains a natural appearance. The visual impacts of activities of man, mainly grazing, are only evident when viewed up close.

c. Solitude

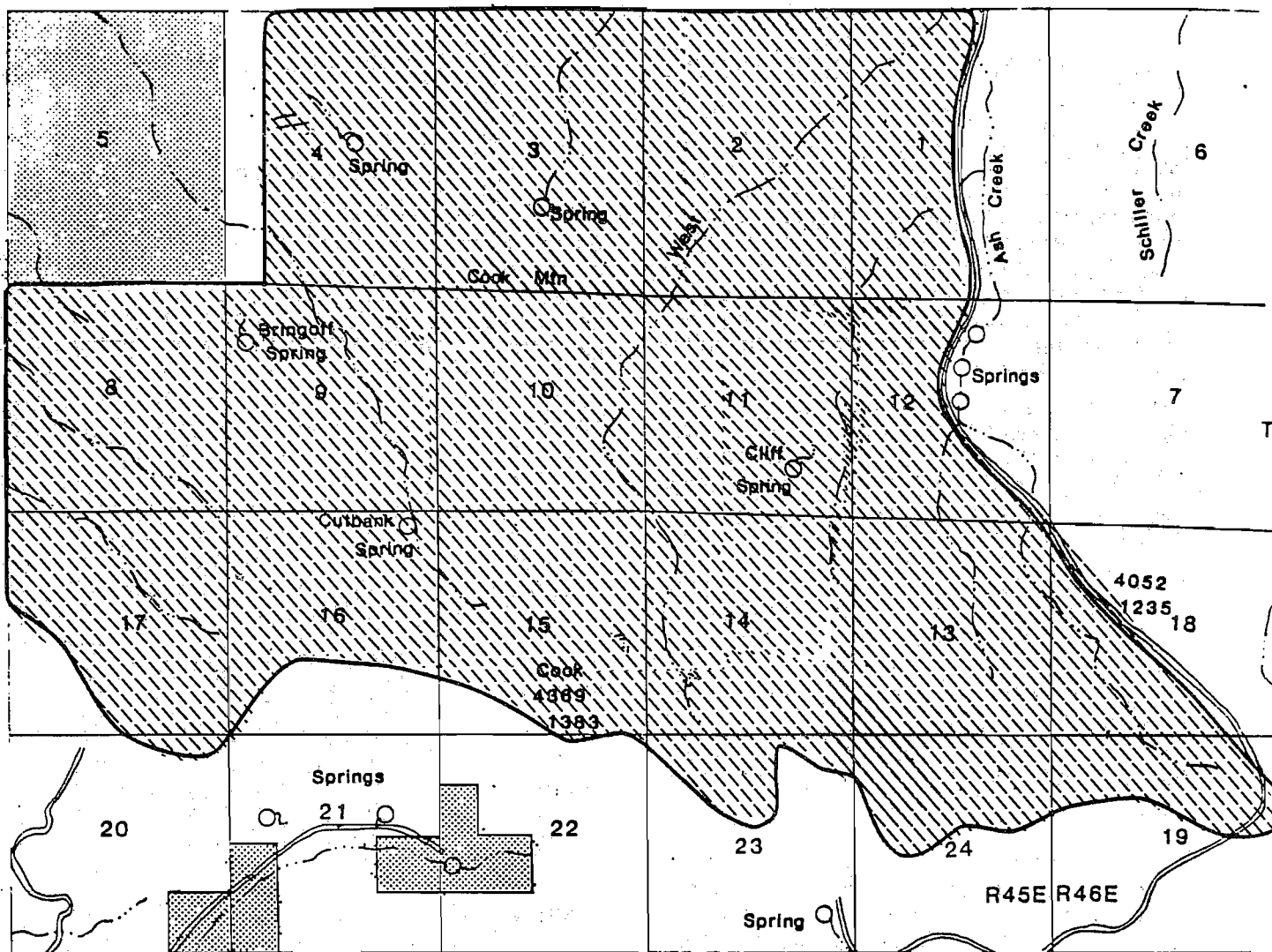
Opportunities for solitude do exist because of topographic relief and vegetative cover. The presence of livestock may detract from the opportunity for solitude during the period of time that livestock are permitted. The distance from perimeter to the core is an average of 1½ miles.

d. Primitive Recreation Opportunities

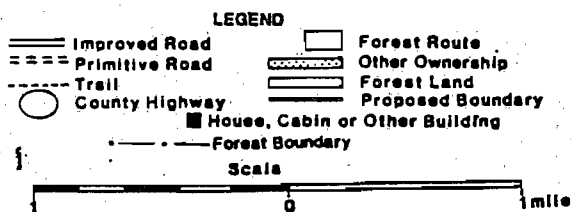
The area has a moderate potential for primitive recreation in the form of hiking, horseback riding and hunting. Physically challenging recreational activities center around coping with a harsh environment in the summer as well as the winter. Poisonous snakes are common inhabitants offering the challenge of coexistence. Hiking trails, as such, are nonexistent.

e. Other Features

Many of the drainages offer good scenic values in the fall with the change in foliage color. The likelihood of cultural resources occurring in this area is high.



01370 COOK MOUNTAIN
Custer National Forest Ashland Ranger District



2. Wilderness Manageability and Boundaries

The Cook Mountain Roadless Area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. As noted below there have been no changes in the acreage of this area.

Gross Acres	Net Acres	
11,700	11,700	RARE II Inventory
0	0	Acres impacted
11,700	11,700	1983 Roadless Inventory

The majority of the non-conforming activities within the area center around minerals and range management activities. Since a portion (4,800 acres) of the area is leased for oil and gas exploration, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the leases until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals located under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

There is also some private coal under Federal surface ownership—especially in the northern portion of the area. Because of the Surface Mine and Reclamation Act, it is unclear if these minerals could be developed.

The Cook Mountain Roadless Area is a compact unit with well-defined boundaries. The south boundary is along a major divide and would be easily located on the ground. The eastern boundary follows an existing road. The north and west boundaries of the unit are the National Forest boundaries which coincide with allotment boundary fences. For the most part these fences are correctly placed on the National Forest boundary.

There are numerous access points along the north, east, and south boundaries. It would not be possible to exclude any of the range improvements through boundary adjustments and still maintain a definable boundary.

B. Resources

The discussion that follows refers to resources present within this roadless area other than the previously discussed wilderness resource.

TABLE C-7
ROADLESS AREA RESOURCE SUMMARY
COOK MOUNTAIN ROADLESS AREA

Area Description: 01370
Gross Acres: 11,700
Net Acres: 11,700

Description	Units	Value
Recreation		
Primitive	RVD's	403
SPNM	RVD's	161
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	8,892
Allotments	# of	1
AUM's	AUM's	3,892
Existing Vacant		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	576
Standing Volume	MBF	3,672
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	8,775
Winter Habitat	Acres	2,925
Specific — Elk		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Deer		
Summer Habitat	Acres	8,775
Winter Habitat	Acres	2,925
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0

Description	Units	Value
Significant Fisheries		
Stream Miles	Miles	0
Stream Habitat	Acres	0
Lakes	# of	0
Lake Habitat	Acres	0
Water Developments		
Existing	# of	0
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	0
Low	Acres	11,700
Mining Claims	# of	0
Oil and Gas Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	11,700
Low	Acres	0
Oil and Gas Leases		
Leases	# of	3
Leased Area	Acres	4,845

Existing recreational use within the area is very light. The majority of the use is fall big game hunting and spring and fall turkey hunting. It is estimated that existing use of the area produces 600 recreational visitor days with a capacity for 4,680.

As previously mentioned, the area is important for the production of livestock grazing. The area contains the majority of the Ash Creek Allotment. The area contains approximately 8,900 acres of suitable range which supports about 3,900 AUM's. Range improvements include fences and stock-water developments.

It is estimated the area contains only 600 acres of suitable ponderosa pine. Most of the suitable timber is located in the southern portions of the area. The estimated standing volume is 3.5 million board feet.

The area provides approximately 8,892 acres of summer habitat and 3,892 acres of winter habitat for mule deer, and 1,200 acres of summer habitat and 240 acres of winter habitat for antelope. The draws and timbered areas also provide habitat for wild turkeys and, to a lesser extent, sharp-tail grouse. There are no fisheries within the area.

The mineral potential for oil and gas is rated as moderate over the entire area. Approximately 4,800 acres of the area is leased. Hardrock mineral potential for the area is rated low, but the entire area is underlain by coal. Surface mining is presently prohibited on the area by the Surface Mining and Reclamation Act. There are outstanding mineral rights for coal and oil and gas within the area. There are no mineral resource activities operating at this time.

C. Management Considerations

Management of fire in this area is not expected to create problems. There are no non-Federal lands within the area.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a 2-hour drive from population centers in North and South Dakota. It is approximately 125 miles southeast of Billings, Montana, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The area is located approximately 135 east of the Absaroka-Beartooth Wilderness.

E. Contribution to the National Wilderness Preservation System

The area contains the eastern ponderosa pine ecosystem. The representation of this ecosystem in the present National Wilderness System is somewhat limited. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Cook Mountain area have been designated.

F. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in these areas. Of the responses received, only 5 referred to the Cook Mountain area specifically. Interest expressed about this area focused on multiple-use management of the area because of the lack of true wilderness qualities and the importance of the area for livestock grazing. Contrasting this was a concern for retaining roadless management to provide for wildlife needs and quality hunting.

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (areas)	Ashland (areas)	Grasslands (areas)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200

Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest

	Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles			
No. of Areas	4	0	0
No. of Acres	897200	0	0
Wilderness Within 101-200 Miles			
No. of Areas	3	5	1
No. of Acres	742200	2525900	10700
Wilderness Within 201-300 Miles			
No. of Areas	11	2	0
No. of Acres	5482381	584300	0

Through the development of the Ashland Land Management Plan, most local people expressed opposition to formal classification of the area. The final allocation through the RARE II process was non-wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on

wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-8 describes prescription assignment by alternative.

B. Impacts

1. Designation: Wilderness

Management Prescription: Wilderness

The Cook Mountain Area is allocated totally to a wilderness prescription in Alternatives 1, 4, 5a, and 7a.

A wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing or potential uses and facilities. No future construction of roads would be permitted. The harvest of the existing timber volume, estimated to be approximately 3.7 mmbf, would be forgone.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

TABLE C-8
MANAGEMENT EMPHASIS BY ALTERNATIVE
COOK MOUNTAIN ROADLESS AREA 1370

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE															
	Alternative															
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9 PA 10
Wilderness	11700			11700		11700								11700		
Range/Wildlife/Roadless Mgmt.		11478	11478		11700		11700	11700	11700	11700	11700	2435		11124	11700	11700
Timber Mgmt.		222	222									222		222		
Forage/Timber												354		354		
Range/Wildlife												8689				
Summary of Management Emphasis:																
Roaded																
Decade 1		222	222									9265		576		
Decade 5		222	222									9265		576		
Roadless																
Decade 1		11478	11478		11700		11700	11700	11700	11700	11700	2435		11124	11700	11700
Decade 5		11478	11478		11700		11700	11700	11700	11700	11700	2435		11124	11700	11700
Wilderness	11700			11700		11700								11700		

Wildlife habitat would not be significantly affected under a wilderness prescription unless livestock numbers were significantly lowered, thereby reducing competition for forage and space. Possible disturbance of wildlife due to human activities would be eliminated due to the elimination of motorized traffic, although hunting would still be allowed. Wildlife habitat would change primarily through natural ecological succession as affected by grazing.

A wilderness prescription would affect the future minerals management program on the area. If existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Economic effects would be significant. The potential for oil and gas reserves in the area is rated as moderate and the loss of potential revenues from mineral leasing and future production could be significant. A wilderness prescription would also increase the costs of range management, specifically maintenance of range improvements, since the use of motorized vehicles and equipment would, in all likelihood, be eliminated.

The nonpriced benefits affected are as follows:

- Existing visual quality would be maintained.
- Security for big game (deer) would increase.
- Increase in the acreage representing the Northern Great Plains Ecosystem in the National Wilderness System.
- The recreational opportunity setting would change from semi-primitive, non-motorized to primitive.

2. Designation: Nonwilderness
Management Prescription:
Range/Wildlife/Roadless Management

The entire area is allocated to this prescription in Alternatives 5, 5b, 5c, 6, 6a, 6b, 8, 9, and 10 (the Proposed Action). Alternatives 2, 3, and 7b allocate 98 percent of the area to this prescription. Alternative 7 allocates 2,435 acres or 21 percent of the area to this prescription.

This management prescription would essentially maintain the current management strategy for this area. The range, wildlife and roadless values would remain the most important considerations.

Timber harvest and its associated value would be forgone unless a major outbreak of insects and/or disease necessitated treatment.

Range management goals would be to maintain AUM production at or near current levels while implementing some type of intensive management system on the Ash Creek Allotment. Implementing an intensive range management system would necessitate some additional range improvements such as fences and water developments. This would impact the wilderness attributes of the area somewhat but would not preclude a wilderness designation at some later point in time.

Wildlife goals would be to maintain or improve the habitat for deer, antelope, turkey, and grouse. This would impact the range management goals to a degree in that forage needs for wildlife must be recognized.

This prescription would significantly affect the mineral management program. Mineral leases would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would have to be honored. Minerals management under this prescription would have little or no effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. This type of dispersed recreational use would have no effect on the wilderness resource or other resource values.

The economic and social effects would be somewhat significant. More intensive range management would be more costly to the livestock producers. Motorized equipment could be used to construct and maintain range improvements as long as roads were not constructed.

The loss of potential oil and gas revenues from leasing and/or production could represent a significant economic loss.

Nonpriced values would be affected as follows:

- Impacts to the landscape would increase slightly with the addition of more range improvements.
- Security for big game would be maintained at or near current levels.
- There would be no additional acres added to the National Wilderness System.
- The recreation setting opportunity would remain as semi-primitive, non-motorized.

3. Designation: Nonwilderness
Management Prescription: Timber
Management

Alternatives 2, 3, 7, and 7b allocate an insignificant area, 222 acres, to this prescription. No other alternatives utilize this prescription. This is

approximately 2 percent of the entire area or about half of the suitable timber acres. The suitable timber acres are located in the extreme southern portion of the area. The impacts and consequences in regards to wilderness or other resources is inconsequential. Some minor adjustments in the southern boundary could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

4. Designation: Nonwilderness
Management Prescription:
Forage/Timber

Alternatives 7 and 7b allocate 354 acres or approximately 3 percent of the total area. None of the other alternatives utilize this prescription. The impacts and consequences in regards to wilderness or other resources is inconsequential. Some minor adjustments in the southern boundary could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

5. Designation: Nonwilderness
Management Prescription:
Range/Wildlife

Alternative 7 allocates approximately 8,700 acres or 74 percent of the area to this prescription. There is no allocation to this prescription in any of the other alternatives.

This management prescription, while maintaining some traditional management emphasis on the area, would change the current management direction for the area from one of roadlessness to development.

Allocation to this prescription would forgo the possibility of wilderness allocation by the end of the second decade. The suitable timber in the southern portion of the area would be scheduled for harvest up to the limit of the considerations for wildlife under this prescription. In general, timber would be harvested to meet the goals and objectives of range and wildlife.

Range management goals would be to increase domestic livestock production through implementation of intensive management which could include such things as water developments and fences, as well as nonstructural range improvements. Access needed for the construction of

range improvements would be constructed. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of the area as wilderness.

Wildlife goals would be to maintain or improve the habitat for the most important species within the area—deer and wild turkey. Some timber management activities such as harvest methods would have to consider wildlife needs. This would impact the forage production potential in some of the timbered areas. Range management systems would have to be somewhat tailored to meet, to the extent possible, the wildlife habitat needs within the area.

This prescription would also result in the development of the area in terms of minerals. Preplanning would be needed to lessen the potential impacts on the range and wildlife values. If exploration resulted in production of oil and gas reserves, a future wilderness classification would in all probability be precluded.

Recreation opportunities would change as the area became roaded. Although hunting would probably remain as the primary recreational activity, recreationists would have motorized access to parts of the area.

The economic and social effects would be somewhat significant. While intensive range management would require more investment on the part of the livestock producers and the Forest Service, livestock production would be increased. The maintenance and construction of range improvements would be facilitated by motorized access. Possible minerals production would mean an increase in local employment.

The nonpriced impacts are as follows:

- Visual impacts to the landscape would increase.
- Security for big game would decrease.
- The recreational opportunity setting would change from semi-primitive, non-motorized to roaded natural appearing.
- Local employment would increase slightly.
- Loss of the potential to increase the acres of the Northern Great Plains Ecosystem in the National Wilderness System.

FISHTAIL SADDLEBACK 01366

GROSS ACRES — 16,560

NET ACRES — 16,560

I. INTRODUCTION AND DESCRIPTION

This U-shaped roadless area stretches from West Rosebud Creek to the Stillwater River along the north face of the Beartooth Mountains. The area is located approximately 15 air miles southwest of Absarokee, Montana, and 40 air miles southwest of Billings, Montana. Access is interstate highway, state, county and Forest roads. The area is bounded on the southeast by West Rosebud Creek, on the north and northeast by the Forest Service and private land boundary, and on the west by the Stillwater River. The south boundary adjoins the Absaroka-Beartooth Wilderness.

Elevation varies from 9,900 feet in the area of the Stillwater Plateau to 6,200 in the area of Island Park in Fishtail Creek. This area encompasses the north facing slopes of the north end of the Beartooth Mountains. Higher elevations are characterized by very steep slopes dissected by the upper reaches of many of the drainages, while the lower elevations tend to be much less steep. The area adjacent to West Rosebud Creek is a steep, rocky southeast facing slope that tends to be a somewhat drier and warmer site than the rest of the area. Important drainages in the area include Fishtail Creek, Fiddler Creek, Little Rocky Creek, and Nye Creek. Drainage is either directly or indirectly into the Stillwater River.

The area is heavily timbered especially in the north and northeastern portions. This tree cover is intermittently broken by grassland areas that provide diversity in the landscape as well as grazing by wildlife and domestic livestock. The dominant tree species in the area are Douglas-fir, lodgepole pine, and spruce at the lower elevations. The upper slopes are dominated by alpine fir, whitebark pine, and spruce. Patches of aspen are common along the various drainages. The open grassland and mountain meadows are dominated by various bunchgrasses, sedges, and forbs.

Some of the current uses include important habitat for various wildlife species including elk, deer, bighorn sheep, and moose. In addition, some of the creeks provide spawning habitat for trout. Portions of two livestock grazing allotments lie in the northern end of the area. This area is the eastern end of the Stillwater Minerals Complex, a mineralized area known to contain deposits of chromite, copper, nickel, iron ores, and platinum group metals.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

This roadless area has some intrusions into it in the northern portion. There are some old access roads and irrigation ditches in the Island Lake Area. South and west of Chrome Lake are two old roads used by hunters and prospectors for access into the area. The remnants of several trail systems still remain, which have been abandoned and are not currently maintained as part of the Forest Service Trail System. For the most part natural ecological processes and the natural landscape remain intact.

b. Natural Appearance

The appearance of this area has been influenced by natural processes with some impacts by man. Although the naturalness of the area is impacted by the previously mentioned roads, irrigation ditches, and trails, visitors to the area would feel that the greater portion maintains a natural appearance.

c. Solitude

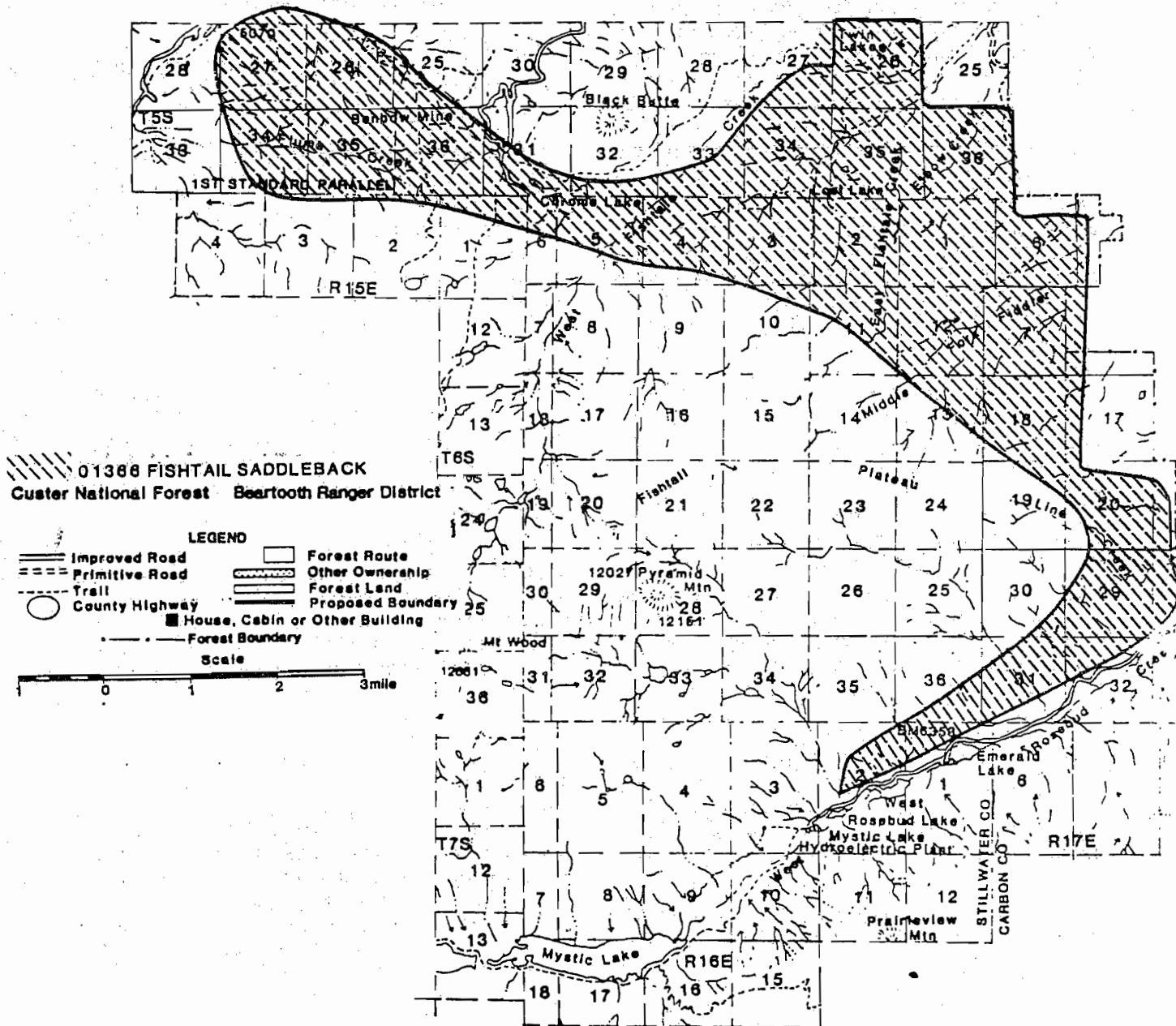
Opportunities for solitude exist in some areas due to vegetative and topographical screening. The distance from perimeter to core is short; therefore, these opportunities are somewhat minimized. Public access to the major portion of the area is lacking.

d. Primitive Recreation Opportunities

The area possesses only a low to moderate potential for primitive recreation as compared with other areas on the Beartooth Ranger District. There are no major destination points within the area, but two trails service portions of the area. The area does possess some challenging terrain in the Fishtail Creek area. There would be significant potential for recreation use in the Fishtail drainage if public access was acquired for that area and the old trails were maintained. Public access is lacking for a major portion of the area.

e. Other Features

The area is not known to possess any special features or qualities that would distinguish it from adjacent areas.



2. Wilderness Manageability and Boundaries

The Fishtail Saddleback Roadless Area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. The changes in the roadless acres in this area are noted below.

Gross Acres	Net Acres	
20,360	20,360	Original RARE II acres
- 3,800	- 3,800	Adjustments
16,560	16,560	1983 Roadless Inventory

The boundary of the roadless area is a combination of roads, property lines, and physical features. The addition of this area to the Absaroka-Beartooth Wilderness would enlarge the acreage, but would not improve the manageability of the area.

Since the majority of the roadless area (13,505 acres) is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within the leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics under the recommended wilderness management emphasis are limited to the following.

- Honor the existing leases until expiration. If no discovery is made, then the area could be recommended for withdrawal from mineral entry and the leases would not be reissued. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Buy back the leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

The potential of the known minerals deposit must be considered in management allocations.

There are no private inholdings within the area.

B. Resource

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-9
ROADLESS AREA RESOURCE SUMMARY
FISHTAIL SADDLEBACK ROADLESS AREA

Area Description: 01366
Gross Acres: 16,560
Net Acres: 16,560

Description	Units	Value
Recreation		
Primitive	RVD's	0
SPNM	RVD's	500
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	675
Allotments	# of	2
AUM's	AUM's	396
Existing Vacant		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	8,212
Standing Volume	MBF	40,977
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	11,335
Winter Habitat	Acres	5,225
Specific — Elk		
Summer Habitat	Acres	3,520
Winter Habitat	Acres	0
Specific — Deer		
Summer Habitat	Acres	7,815
Winter Habitat	Acres	2,605
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	0
Winter Habitat	Acres	2,620
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0
Significant Fisheries		
Stream Miles	Miles	0
Stream Habitat	Acres	0
Lakes	# of	1
Lake Habitat	Acres	5
Water Developments		
Existing	# of	0

Description	Units	Value
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	11,592
Moderate	Acres	4,968
Low	Acres	0
Mining Claims	# of	167
Oil and Gas Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	16,560
Low	Acres	0
Oil and Gas Leases		
Leases	# of	13
Leased Area	Acres	13,505

This area produces about 500 recreational visitor days (RVD's) annually, but has an existing capacity to produce 4600 RVD's. The majority of the recreational use which now occurs is in the form of fall big game hunting. The relatively small amount of current recreational use the area receives is attributed to the fact that an abundance of high quality wilderness opportunities exist in surrounding areas on the Forest and because of the lack of a major destination point within this area.

The area provides limited grazing for domestic livestock. Portions of two range allotments are within the area. The area contains 675 acres of suitable range which supports 396 AUM's of grazing annually.

It is estimated that the area contains 8,212 acres of suitable timber and approximately 41 MMBF of standing volume. The main suitable timber areas are in the north and the northwestern portions of the area.

The area provides 16,560 acres of summer and winter habitat for elk, deer, moose, and to a lesser extent, bighorn sheep. The area is not known to provide habitat that supports any threatened and/or endangered species. The area does not contain any significant fisheries, although some of the drainages do provide spawning habitat for trout.

The area is valuable for hardrock minerals, and is the easternmost extension of the Stillwater Complex. The Stillwater Complex contains the largest potential chromite and platinum group metal resources and the second largest nickel resources in the United States. Mining activities in the Complex have occurred in the past. They ceased in 1961 but exploration activities resumed in the late 1960's. Presently a mining company is exploring the feasibility of mining the Complex. Although there is no active mining going on in this roadless area, there are 167 mining claims in the area. Mineral potential, as expected, is rated high to very high. In addition, 13 oil and gas leases blanket a little over 13,500 acres of the area.

A cultural resource inventory of this area has not been performed. There are no known cultural resource sites in this area.

C. Management Considerations

Apart from some old access roads, abandoned trails, and irrigation ditches, all of which nature is reclaiming, there are few if any special management considerations within this area.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This Roadless Area is more than a two-hour drive from population centers in North and South Dakota. The area is about 50 miles southwest of Billings, Montana, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest.

It is estimated that the adjacent Absaroka-Beartooth Wilderness will reach capacity by the mid 1990's. In a small way, this area might help to meet the projected needs for primitive recreation. However, the area lacks any major attraction, and the current lack of use can be attributed to this along with the presence of high quality of wilderness within the Forest zone of influence.

E. Contribution to the National Wilderness Preservation System

There are no vegetative habitat types, plant or animal species, or geologic types known to exist in this area that are not currently represented in existing wilderness areas.

F. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (acres)	Ashland (acres)	Grasslands (acres)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agle (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200

Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest					
			Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles					
	No. of Areas		4	0	0
	No. of Acres		897200	0	0
Wilderness Within 101-200 Miles					
	No. of Areas		3	5	1
	No. of Acres		742200	2525900	10700
Wilderness Within 201-300 Miles					
	No. of Areas		11	2	0
	No. of Acres		5482381	584300	0

adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 5 responses referred to the Fishtail-Saddleback area specifically. Interests expressed about this area focused on roadless management for the security and enlargement of the Absaroka-Beartooth Wilderness. Contrasting this, the concern for hardrock minerals development did not support retaining the area as roadless or wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the manage-

ment of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism

from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These comment-

ers felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternatives

Table C-10 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness Management Prescription: Wilderness

A wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing or potential non-conforming uses and facilities. The area would remain as roadless subject to existing mineral leases.

The prescription is applied to the entire area in Alternatives 7b, and 4, to 97 percent in Alternative 1, to 30-40 percent in Alternatives 5b and 8, and to 1 percent in Alternative 2.

Under this prescription, the area would be managed as a roadless area, with due consideration for the existing oil and gas leases. Hardrock mineral exploration

would be allowed within existing laws and regulations. No other uses or activities would be permitted which would detract from the wilderness resource. When the oil and gas leases no longer exist, the area could then be considered for wilderness designation.

TABLE C-10
MANAGEMENT EMPHASIS BY ALTERNATIVE
FISHTAIL SADDLEBACK ROADLESS AREA 1366

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE																	
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9	PA 10	
Wilderness	16047	100		16560		10728	5013								16560			
Minimum Level (Roadless Mgmt.)		3705			2489		4324	3430	4225	4644	3705					9363	4225	4225
Minerals		392	903						392	392	392	384	392				392	392
Recreation/Wildlife																		
Roadless Mgmt.	513	12209	10165		14071	5832	7223	13130	10402	7723	8973	15812	10310		0	7197	10685	10402
Timber/Forage		154	5492						1541	3801	3490	364	5858				1268	1541
Summary of Management Emphasis:																		
Roaded																		
Decade 1		546	6395						1933	4193	3882	748	6250				1660	1933
Decade 5		546	6395						1933	4193	3882	748	6250				1660	1933
Roadless																		
Decade 1	513	15914	10165		16560	5832	11547	16560	14627	12367	12678	15812	10310		16560	14900	14627	
Decade 5	513	15914	10165		16560	5832	11547	16560	14627	12367	12678	15812	10310		16560	14900	14627	
Wilderness	16047	100		16560		10728	5013								16560			

Timber would not be harvested under this allocation, and the value associated with the existing and future timber resource would be forgone.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

Wildlife values would be maintained at or near current levels. Security for big game species would be maintained.

Dispersed recreation opportunities would remain at current levels. Hunting would still remain as the primary use of the area.

Existing oil and gas leases would have to be honored; however, if these leases expired without development they would not be reissued. No new leases would be issued. Hardrock mining would be allowed under existing laws and regulations.

Nonpriced values would be affected as follows:

- Wildlife habitat values would remain at or near the current level.
- Water quality would be maintained at the current level.
- Soil and air would be maintained at the current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would slightly increase in use.
- Acres in the National Wilderness System would be increased.

The local economy has a strong reliance on recreation and tourism. The on-site use of this area, excluding minerals, is very minor in the total economic spectrum. People come to view the area, the scenery and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season.

Development of the minerals, both hardrock and oil and gas, could have very significant social and economic impacts.

2. Designation: Nonwilderness Management Prescription: Minimum Level

The theme of this management prescription

would be a minimum level or custodial management. Existing oil and gas leases would have to be honored, but in general there would be few in any management induced outputs. The area would remain roadless and undeveloped unless existing oil and gases leases were to be developed.

This prescription is applied to 60 percent of the area in Alternative 8, and to from 16 percent to 28 percent of the area in Alternatives 2, 5, 5b, 5c, 6, 6a, 6b, 9 and 10 (the Proposed Action).

There would be no scheduled timber harvest. The value associated with the existing and future timber resource would be forgone.

The grazing of domestic livestock would continue but probably at a substantially reduced rate. No new improvements would be constructed. Livestock numbers would be adjusted as range improvements became non-functional over time. Season-long grazing would eventually occur, but would be limited to the areas of primary range.

Wildlife habitat and values would benefit from any reduction in grazing by livestock. Overall, wildlife values would remain at or near current levels. Dispersed recreation would remain at or near current levels.

Nonpriced values would be affected as follows:

- Wildlife habitat would remain at or near current levels.
- Water quality would increase slightly over time.
- Soil and air quality would increase slightly over time.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would decrease slightly due to lack of trail maintenance.
- No wilderness attributes will be forgone with this prescription.
- No acres would be added to the National Wilderness System.

Development of the minerals, both hardrock and oil and gas, could have very significant social and economic impacts.

3. Designation: Nonwilderness Management Prescription: Recreation/Wildlife/Roadless

The acres designated under this prescription would remain essentially roadless and be dedicated to dispersed recreation uses and wildlife habitat management. All alternatives allocate a portion of the area to this prescription except for Alternatives 4 and 7b. The amount designated varies from 503 acres (3 percent) in Alternative 1 and 8 to 15,812 (96 percent) in Alternative 7. In Alternative 10 (the Proposed Action) 10,402 acres are designated to this management prescription.

Most of the alternatives allocate approximately 60 percent of the area to this prescription. The area would remain roadless or undeveloped (subject to existing mineral leases) and dispersed recreation and wildlife habitat values would be emphasized in management.

The wilderness character of the area would be retained under this management prescription, although no additional acres would be recommended for inclusion in the National Wilderness System. The existing oil and gas leases (13) would have to be honored.

Limited timber values will be realized.

Limited domestic livestock grazing is permitted on the area. This allocation would have no impacts on this resource. Since no improvements would be constructed, livestock grazing would have little effect on the wilderness attributes of the area.

Wildlife values would be maintained at current levels or perhaps enhanced slightly over time.

If existing oil and gas leases expired without development they would not be reissued. New leases would not be issued.

Recreation values would increase slightly over time.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at current level.
- Water quality would be maintained at the current level.
- Soil and air quality would be maintained at the current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would increase slightly in use.
- No wilderness attributes will be forgone with this prescription.
- No additional acres would be added to the National Wilderness System.

The development of minerals, both hardrock and oil and gas, could have very significant social and economic effects.

4. Designation: Nonwilderness Management Prescription: Minerals

This prescription is designed to emphasize the management of minerals. Preplanning of the oil and gas development, and planned mitigation measures would be emphasized. Rooding would be involved and these access roads may cross areas of other allocations or prescriptions in order to reach drill sites. The main roads would become part of the permanent Forest Transportation System. Other roads would be closed and

rehabilitated upon termination of minerals' need for the road.

This prescription is applied to 5 percent in Alternative 3 and to 2 percent in Alternatives 2, 6, 6a, 6b, 7, 7a, 9, and 10 (the Proposed Action).

An insignificant amount of the area is allocated to this prescription. Depending on where the minerals development took place within the area, boundaries could be adjusted to maintain the wilderness character over a major portion of the area and still maintain other resource outputs.

The area is now about 60 percent covered with oil and gas leases. The extreme east and west ends are not leased. The leases restrict surface occupancy and road construction to slopes of less than 30 percent. This means the northern portion or lower elevations of Little Rocky, Fishtail and Fiddler Creek may be rooded under the existing leases.

This prescription has no effects unless oil and gas leasees make the decision to drill on the leases. If drilling occurs, there will be significant economic benefits from employment and purchases. If oil is discovered, there will also be tax and fee benefits. Roads may be constructed to access previously inaccessible areas. This could be beneficial to many of the National Forest users, but detract from some of the local interests who have enjoyed restricted access to the areas. The cost of maintenance and administration of the area will increase.

5. Designation: Nonwilderness Management Prescription: Timber/Forage

This prescription calls for the development of the timber resources and use of the cutover areas for forage for both domestic livestock and wildlife. The area would be rooded and the main roads kept open for public use. The timber resource is located in the lower elevations of Little Rocky, Fishtail and Fiddler creeks on the northern portion of the area.

This prescription is applied to 33-35 percent of the area in Alternatives 3 and 7a; to 21-23 percent in Alternatives 6a and 6b; to 8-9 percent in Alternatives 6, 9, and 10 (the Proposed Action); and to 1-2 percent in Alternatives 2 and 7.

The timber resources in the northern portion of the area would be developed. Harvest of available timber would increase forage production for domestic livestock as well as for wildlife. This management prescription would result in the rooding of portions of the area which would adversely affect wildlife and big game security. This could result in the irretrievable loss of the wilderness attributes on at least a portion of the area.

This prescription would allow for the development of the mineral resources within the area to the extent that it did not conflict with timber and forage production. The additional impacts from minerals management would have long-term adverse effects on the wilderness resources.

Forage for wildlife and livestock would be increased. Livestock grazing would be maintained at or near current levels. Some range improvements would be constructed for better management which would adversely affect the wilderness resource. Increases in levels of domestic livestock grazing could adversely affect certain wildlife species.

Nonpriced values would be affected as follows:

- Security for big game would decrease through development of the area.
- Water quality would decrease slightly.
- Soil and air quality would decrease slightly.
- Visual quality would slightly decrease as development occurs.
- Dispersed recreation would slightly increase in use.
- Wilderness attributes may be lost on portions of the areas treated by this prescription where roading is involved.
- No acres would be added to the National Wilderness System.

This prescription will benefit the ranchers who use the area, by providing additional temporary forage for their stock. However, additional stocking would be minimal, but improvement in permanent rangelands could accommodate more use from domestic or wildlife animals. Dispersed recreation opportunities would increase. Local demand for forest products could be partially met.

KING MOUNTAIN 01372

GROSS ACRES — 11,900

NET ACRES — 11,700

I. INTRODUCTION AND DESCRIPTION

Situated in the extreme southeastern corner of Rosebud County, Montana, this roadless area is located about 15 miles south of the small community of Ashland, Montana, and about 140 miles southeast of Billings, Montana. Access is via U.S. Highway 212 and then by Forest System roads. The area is bounded by private land for a portion of the north and west boundaries. The east and northeast boundary is Forest Road #605.

Elevation varies from about 4,100 feet atop the O'Dell Creek Divide to 3,200 feet along Dry Creek in the northwest corner of the area. The O'Dell Creek divide runs north to south and forms the east boundary to the area. From this divide the area falls to the west and the lower elevations near the Tongue River. Consequently, the majority of the area has a west or northwest aspect. At the higher elevations the landscape is dominated by ponderosa pine and bunchgrass ecosystems. With the change in elevations, the ponderosa pine becomes scrubby in nature finally giving way to open grasslands and juniper-sagebrush/grassland ecosystems. Vegetation in the creeks and draws is characterized by scattered ponderosa pine, green ash, and various shrubs, grasses, and forbs. The area is dissected by several ephemeral creeks and draws such as Dry Creek, Hole-In-The-Wall Creek, and Gooseberry Draw. Several perennial springs are located in the area.

Topography varies from gentle, timbered ridgetops to more open timbered slopes and ridges. The area is important for the grazing of domestic livestock as well as providing summer and winter habitat for wildlife. The area is readily accessible but receives only light use by recreationists. The primary recreational use of this area is big game hunting.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

Ecological processes and the natural landscape in parts of the area have been disrupted to a certain extent by domestic grazing and the range improvements necessary for the management of livestock. Allotment fences, spring developments, several water wells, and a range water pipeline are visible from parts of the area. In

Gooseberry Draw there is an old road and an abandoned oil well site which have been rehabilitated. Although these developments do impact the natural integrity of the area, long-term ecological processes have not been appreciably altered.

There are some off-site intrusions into the area in the form of roads and the agricultural developments along the Tongue River.

b. Natural Appearance

Although the naturalness of the area has been impacted to a degree, the roadless area retains a natural appearance representative of the Black Hills Ponderosa Pine and associated grassland ecosystems. Visitors to the area would feel that the greater portion maintains a natural appearance. The visual impacts of the activities of man, mainly grazing, are only evident when viewed up close.

c. Solitude

The opportunity for solitude is relatively good in some of the drainages and in the more timbered portions of the area. The feeling of solitude would lessen as users move to higher elevations where some of the off-site intrusions would become more visible. Topography and vegetative screening mitigate the intrusions to some degree. The presence of livestock may detract from the opportunity for solitude during the grazing season.

d. Primitive Recreation Opportunities

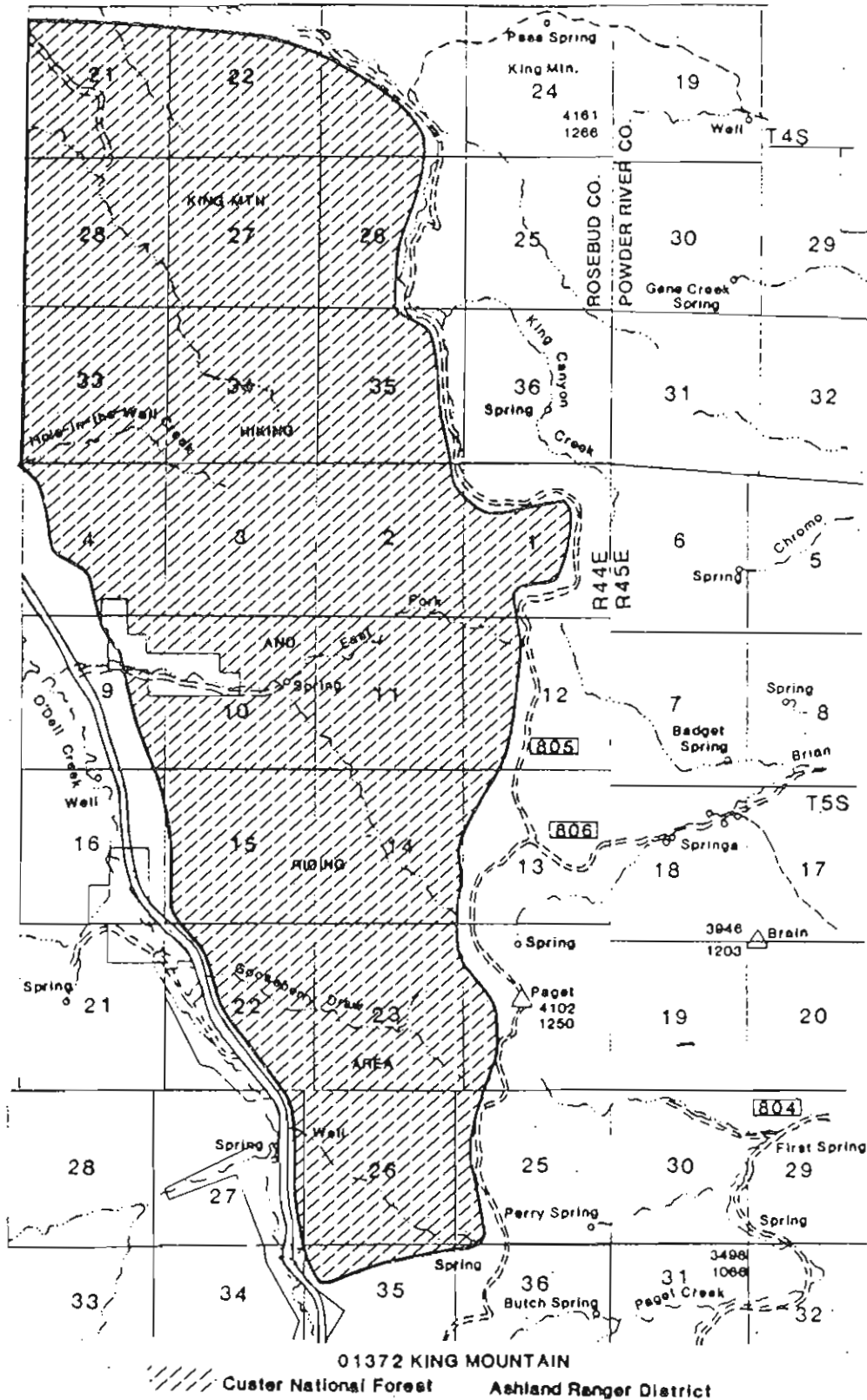
The area has a moderate potential for primitive recreation opportunity. Presently the area is used mainly for fall big game hunting. Some opportunity exists to observe and study big game and non-game wildlife species in their natural habitat. The area does not offer a high degree of challenge due to the relatively gradual elevation changes. Physically challenging recreational activities would center around coping with a harsh environment in the summer as well as in the winter. Poisonous snakes are common inhabitants offering the challenge of coexistence. Hiking trails, as such, are nonexistent.

e. Other Features

Many of the drainages offer high scenic values—especially in the fall with the changes to fall color patterns.

2. Wilderness Manageability and Boundaries

The King Mountain Roadless Area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. As noted below there have been no changes in the acreage of this area.



LEGEND

— Improved Road	□ Forest Route
- - - Primitive Road	▨ Other Ownership
- · - Trail	▩ Forest Land
○ County Highway	— Proposed Boundary
■ House, Cabin or Other Building	— Forest Boundary

Scale
0 1 2 miles

Gross Acres	Net Acres	
11,900	11,700	RARE II Inventory
0	0	Acres impacted
11,900	11,700	1983 Roadless Inventory

The majority of the non-conforming activities within this area center around range management and minerals management. There are allotment fences, spring developments, several water wells, and a range water pipeline within the area. Several unimproved roads penetrate the area. There is some evidence of oil and gas exploration (an oil well pad) in the Gooseberry Draw area. None of these intrusions, however, would preclude the area from being managed as wilderness. However, the entire area is leased for oil and gas. Because of this, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within the leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics under the recommended wilderness management emphasis are limited to the following:

- Honor the lease until expiration. If no discovery is made, then the area would be recommended for mineral withdrawal and leases would not be reissued. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Buy back the leases through Congressional initiative.
- Negotiate with the leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (privately owned minerals under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

The King Mountain Roadless Area is approximately 8 miles in length by 2 miles in width. Present boundaries for the most part are well defined along roads or topographic features. The northwest boundary of the area coincides with the National Forest/private land boundary. Portions of the west boundary follow range allotment fences.

The area is accessible throughout the area. There is approximately 160 acres of private land within the area, but it would be possible to exclude this by adjusting the west boundary. It would not be

possible to exclude any of the range improvements and still maintain a definable boundary.

B. Resources

The discussion that follows refers to resources present within this roadless area other than the previously discussed wilderness resource.

TABLE C-11
ROADLESS AREA RESOURCE SUMMARY
KING MOUNTAIN ROADLESS AREA

Area Description: 01372
Gross Acres: 11,900
Net Acres: 11,700

Description	Units	Value
Recreation		
Primitive	RVD's	1,357
SPNM	RVD's	543
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	7,994
Allotments	# of	2
AUM's	AUM's	3,885
Existing Vacant		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	586
Standing Volume	MBF	2,930
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	8,775
Winter Habitat	Acres	2,925
Specific — Elk		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Deer		
Summer Habitat	Acres	8,055
Winter Habitat	Acres	2,685
Specific — Antelope		
Summer Habitat	Acres	720
Winter Habitat	Acres	240
Specific — Bighorn Sheep		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0
Significant Fisheries		
Stream Miles	Miles	0
Stream Habitat	Acres	0
Lakes	# of	0
Lake Habitat	Acres	0
Water Developments		
Existing	# of	0

Description	Units	Value
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	0
Low	Acres	11,700
Mining Claims	# of	0
Oil and Gas Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	11,700
Low	Acres	0
Oil and Gas Leases		
Leases	# of	5
Leased Area	Acres	11,700

Existing recreational use within the area is very light. The majority of the use is fall big game hunting and spring and fall turkey hunting. It is estimated that the area produces 1,900 recreational visitor days with a capacity for 4,696.

The area is important for the production of livestock grazing. The area contains the major portion of two (2) allotments. The area contains approximately 8,000 acres of suitable range which supports about 3,900 AUM's. Range improvements in the area include stockwater developments and fences.

Timber resources within the area are somewhat limited. It is estimated the area contains approximately 600 acres of suitable acres with a standing volume of about 3 million board feet. Practically all of the suitable timber is located along the eastern side of the area.

The King Mountain area provides approximately 8,055 acres of summer habitat and 2,685 acres of winter habitat for mule deer and 720 acres of summer habitat and 240 acres of winter habitat for antelope. The draws and timbered areas also provide habitat for wild turkeys and, to a lesser extent, sharptail grouse. There are no fisheries in the area.

The potential for oil and gas production is rated as moderate and the entire area is currently leased. Although there has been some past drilling activities associated with oil and gas exploration, there is no current mineral related activity. Hardrock mineral potential is rated as low for the entire area. Coal underlies the area but surface mining of this resource is presently prohibited by the Surface Mining and Reclamation Act. There are no mineral related activities operating at this time.

C. Management Considerations

There is approximately 200 acres of private land within the area but this could be excluded by adjusting the west boundary.

Management of fire in this area is not expected to create problems.

D. Need

1. Proximity To Population Centers and Designated Wilderness

This roadless area is more than a 2-hour drive from regional population centers. It is approximately 140 miles southeast of Billings, Montana, the largest nearby town.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The area is approximately 140 miles southeast of Billings, Montana, and 75 miles north of Sheridan, Wyoming.

E. Contribution to the National Wilderness Preservation System

The area contains the eastern ponderosa pine ecosystem. The representation of this ecosystem in the present National Wilderness System is somewhat limited.

F. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the management of these areas. Of the responses received only 6 referred to the King Mountain area specifically. Interest expressed about this area focused on multiple use management of the area because of the lack of true wilderness qualities and the importance of the area for livestock grazing. Contrasting this, was a concern for retaining roadless management to provide for wildlife needs and quality hunting.

Through the development of the Ashland Land Management Plan, most local people expressed opposition to formal classification of the area. The final allocation through the RARE II process was non-wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more com-

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (acres)	Ashland (acres)	Grasslands (acres)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200
Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest					
			Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles					
No. of Areas		4		0	0
No. of Acres		897200		0	0
Wilderness Within 101-200 Miles					
No. of Areas		3		5	1
No. of Acres		742200		2525900	10700
Wilderness Within 201-300 Miles					
No. of Areas		11		2	0
No. of Acres		5482381		584300	0

ments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people that commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral

management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next ten year timber sale program for the

Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-12 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

The King Mountain Area is allocated totally to a wilderness prescription in Alternatives 1, 4, 5a, and 7b.

A wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing or potential uses and facilities. No future construction of roads would be permitted. The harvest of the existing timber volume, estimated to be approximately 2.9 mmbf, would be forgone.

Domestic livestock grazing would be allowed to continue, but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

Wildlife habitat would not be significantly affected under a wilderness prescription unless livestock numbers were significantly reduced. Possible disturbance of wildlife due to human activities would be eliminated due to the elimination of motorized traffic, although hunting would

TABLE C-12
MANAGEMENT EMPHASIS BY ALTERNATIVE
KING MOUNTAIN ROADLESS AREA 1372

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE															
	Alternative															
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9 PA 10
Wilderness	11700			11700		11700								11700		
Range/Wildlife/Roadless Mgmt.		11474	11474		11700		11700	11700	11700	11700	11700	4170	11114		11700	11700 11700
Timber Mgmt.		226	226									226	226			
Forage/Timber												360	360			
Range/Wildlife												6944				
Summary of Management Emphasis:																
Roaded																
Decade 1		226	226									7530	586			
Decade 5		226	226									7530	586			
Roadless																
Decade 1		11474	11474		11700		11700	11700	11700	11700	11700	4170	11114		11700	11700 11700
Decade 5		11474	11474		11700		11700	11700	11700	11700	11700	4170	11114		11700	11700 11700
Wilderness	11700			11700		11700								11700		

still be allowed. Wildlife habitat would change primarily through natural ecological succession.

A wilderness prescription would effect the future minerals management program on the area. If existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Economic effects would be significant. The potential for oil and gas reserves in the area is rated as moderate and the loss of revenues from mineral leasing and future production could be significant.

The nonpriced benefits affected are as follows:

- Existing visual quality would be maintained.
- Security for big game (deer) would increase.
- Increase in the acreage representing the Northern Great Plains Ecosystem in the National Wilderness System.
- The recreational opportunity setting would change from semi-primitive, non-motorized to primitive.

2. Designation: Nonwilderness
Management Prescription: Range/
Wildlife/Roadless Management

The entire area is allocated to this prescription in Alternatives 5, 5b, 5c, 6, 6a, 6b, 8, 9, and 10 (the Proposed Action). Alternatives 2, 3, and 7a allocate 98 percent of the area to this prescription. Alternative 7 allocates 4,170 acres or 36 percent of the area to this prescription.

This management prescription would essentially maintain the current management strategy for this area. The range, wildlife and roadless values would remain the most important considerations.

Timber harvest and its associated value would be forgone unless a major outbreak of insects and/or disease necessitated treatment.

Range management goals would be to maintain AUM production at or near current levels while implementing some type of intensive management system on the range allotments within the area. Implementing an intensive range management system would necessitate some additional range improvements such as fences and water developments. This would impact the wilderness attributes of the area somewhat, but would not preclude a wilderness designation at some later point in time.

Wildlife goals would be to maintain or improve the habitat for deer, antelope, turkey, and grouse.

This would impact the range management goals to a degree in that forage needs for wildlife must be recognized.

This prescription would significantly affect the mineral management program. Mineral leases would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would have to be honored. Minerals management under this prescription would have little or no effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. This type of dispersed recreational use would have no effect on the wilderness resource or other resource values.

The economic and social effects would be somewhat significant. More intensive range management would be more costly to the livestock producers. Motorized equipment could be used to construct and maintain range improvements as long as roads were not constructed.

The loss of potential oil and gas revenues from leasing and/or production could represent a significant economic loss.

Nonpriced values would be affected as follows:

- Impacts to the landscape would increase slightly with the addition of more range improvements.
 - Security for big game would be maintained at or near current levels.
 - There would be no additional acres added to the National Wilderness System.
 - The recreation setting opportunity would remain as semi-primitive, non-motorized.
3. Designation: Nonwilderness
Management Prescription: Timber
Management

Alternatives 2, 3, 7, and 7a designate an insignificant area, 226 acres, to this prescription. All other alternatives do not utilize this prescription. This is approximately 2 percent of the entire area or about half of the suitable timber acres. The suitable timber acres are located in the extreme southern portion of the area. The impacts and consequences in regards to wilderness or other resources is inconsequential. Some minor adjustments in the southern boundary could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

4. Designation: Nonwilderness
Management Prescription: Forage/Timber
- Alternatives 7 and 7a designate 360 acres or

approximately 3 percent of the total area. None of the other alternatives utilize this prescription. The impacts and consequences in regards to wilderness or other resources is inconsequential. Some minor adjustments in the southern boundary could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

5. Designation: Nonwilderness

Management Prescription: Range/Wildlife

Alternative 7 designates approximately 7,000 acres or 60 percent of the area to this prescription. This prescription is not utilized by any of the other alternatives.

This management prescription, while maintaining some traditional management emphasis on the area, would change the current management direction for the area from one of roadlessness to developed.

Allocation to this prescription would forgo the possibility of wilderness designation by the end of the second decade. The suitable timber in the southern portion of the area would be scheduled for harvest up to the limit of the considerations for wildlife under this prescription. In general, timber would be harvested to meet the goals and objectives of range and wildlife.

Range management goals would be to increase domestic livestock production through implementation of intensive management which could include such things as water developments and fences, as well as nonstructural range improvements. Access needed for the construction of range improvements would be constructed. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of the area as wilderness.

Wildlife goals would be to maintain or improve the habitat for the most important species within the area, deer and wild turkey. Some timber man-

agement activities such as harvest methods would have to consider wildlife needs. This would impact the forage production potential in some of the timber areas. Range management systems would have to be somewhat tailored to meet to the extent possible the wildlife habitat needs within the area.

This prescription would also result in the development of the area in terms of minerals. Preplanning would be needed to lessen the potential impacts on the range and wildlife values. If exploration resulted in production of oil and gas reserves, a future wilderness classification would in all probability be precluded.

Recreation opportunities would change as the area became roaded. Although hunting would probably remain as the primary recreational activity, recreationists would have motorized access to parts of the area.

The economic and social effects would be somewhat significant. While intensive range management would require more investment on the part of the livestock producers and the Forest Service, livestock production would be increased. The maintenance and construction of range improvements would be facilitated by motorized access. Possible minerals production would mean an increase in local employment.

The nonpriced impacts are as follows:

- Visual impacts to the landscape would increase.
- Security for big game would decrease.
- The recreational opportunity setting would change from semi-primitive, non-motorized to roaded natural.
- Local employment would increase slightly.
- Loss of the potential to increase the acres of the Northern Great Plains Ecosystem in the National Wilderness System.

LINE CREEK PLATEAU 01911

	GROSS ACRES	NET ACRES
Custer National Forest (MT)	20,680	20,680
Shoshone National Forest (WY)	112,800	112,800

I. INTRODUCTION AND DESCRIPTION

The Shoshone National Forest in Region 2 is the lead Forest for this Roadless Area Evaluation. The Custer National Forest portion lies in Montana, and the Shoshone National Forest portion lies in Wyoming. This narrative deals with just that portion administered by the Custer National Forest.

This roadless area is situated 8 miles south of Red Lodge, Montana and approximately 70 miles southwest of Billings, Montana. This area lies in the southeastern portion of Carbon County, Montana with the southern boundary to the area being the Wyoming-Montana state line. To the west, the area is bounded by U.S. Highway 212. The northern boundary to the area is formed by the joining of private lands and lands administered by the Custer National Forest. The eastern boundary of the area parallels the Face of the Mountain Trail. The area includes the Mount Maurice and the Tolman Mountain area. Line Creek Plateau, a high alpine grassland ridgetop, bisects the area in a northeasterly direction.

Elevation varies from 7,000 feet on the north end of the area to 9,867 feet atop Tolman Mountain. The northern portion of the area is characterized by north-facing slopes with steep, rugged canyons and timbered ridges. Douglas-fir and lodgepole pine ecosystems dominate the vegetation at the lower elevations. At the higher elevations, alpine fir and spruce are the major tree species. Perennial streams are common in this area. The Line Creek Plateau bisects the area in a northeasterly direction and is characterized by a dry alpine ecosystem which has a unique organic horizon consisting of a tough fibrous turf 1-5 inches thick. The vegetation in this area consists mainly of various sedges, forbs, and grasses. This area is drained by Wyoming Creek, Line Creek, and Robinson Draw. Many draws and canyons bisect the area. The Roadless Area is joined on the south by an extensive unroaded area in Wyoming. To the west, across U.S. Highway 212, is the eastward extension of the Absaroka-Beartooth Wilderness. Access to the area is by U.S. Highway 212.

The area is important for the wildlife habitat it provides. The area is summer and winter range for elk, mule deer, bighorn sheep, and Rocky Mountain goats. In addition, the area supports a good population of blue grouse. Line Lake, located in

the extreme southern end of the area, provides a fishery resource. Scenic attractiveness is associated with a diversity of landscapes found in the area as well as adjacent scenes into the high lake county of Wyoming. The clumps of aspen in the draws add to the fall color of the landscape. Present use consists mostly of fall big game hunting with lesser amounts of day-use trips by hikers and horse users. Some limited use is made of Line Lake as a fishery and some snowmobiling occurs on Line Creek Plateau. Livestock are grazed along main Rock Creek in northeast corner of area. The entire area is blanketed with oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

This roadless area has only a few intrusions around the edges. Still evident in the Line Creek area is the remains of an old jade mine and the area of Maurice Creek to Sheridan Creek was logged for mine props in the early 1900's. Some of the evidence of this logging still remains although most of the area has completely healed. Several two-track roads still exist in the area of Line Lake. The Line Creek Plateau Trail is a two-track road for a short distance from U.S. 212. Internal impacts consist of approximately 25 miles of Forest Service developed trails.

b. Natural Appearance

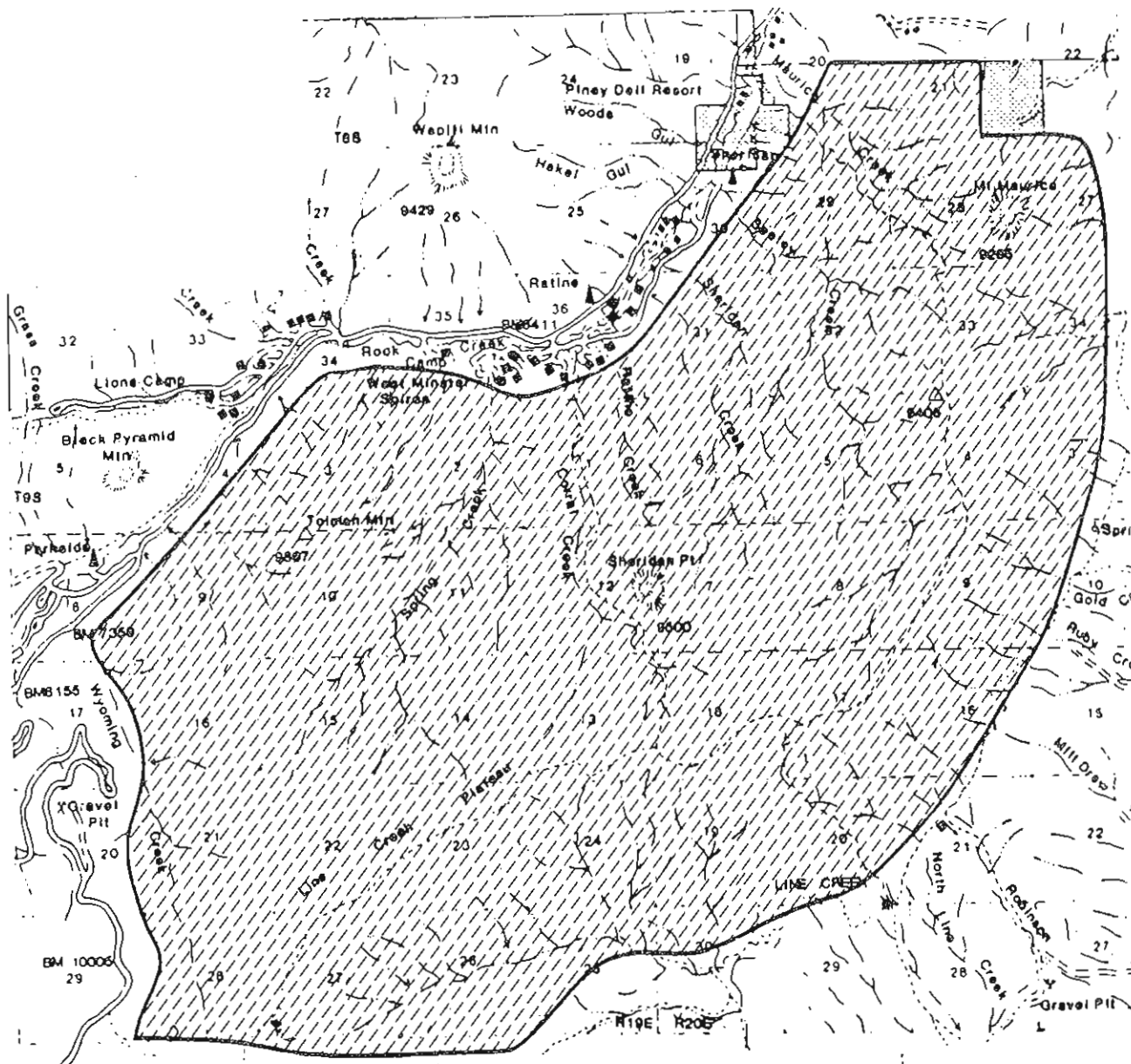
The appearance of this area has been influenced by natural processes with very little impact by man. Although the naturalness of the area is impacted by the previously mentioned trails, and evidences of mining and timber harvest, visitors to the area would feel that the greater portion maintains a natural appearance.

c. Solitude

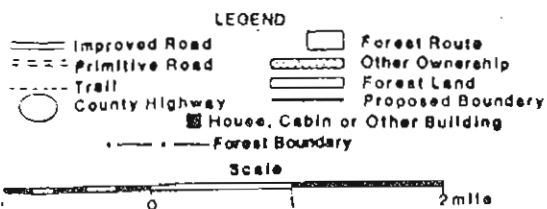
Opportunities for solitude do exist over the greater portion of this area. The distance from perimeter to the core is moderate with good vegetative screening and topographic diversity.

d. Primitive Recreation Opportunities

The area has a moderate potential for primitive recreation opportunity. Current activities are



01911 LINE CREEK PLATEAU
Custer National Forest Beartooth Ranger District



primarily hiking, overnight camping and back-packing, fishing and hunting. The diversity of the terrain adds to the visitor's primitive experience.

e. Other Features

The area is considered to have good scenic value due to the views into the high lake country of Wyoming and the fall color of the many clumps of aspen dispersed throughout the area. It is suspected that the area is somewhat rich in cultural resources.

2. Wilderness Manageability and Boundaries

The Line Creek Plateau roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

Gross Acres	Net Acres	
20,680	20,680	RARE II Inventory
20,680	20,680	Final

The area contains well-defined boundaries set along roads, trails, topographic features, or legal subdivisions. The Montana-Wyoming State line is definable, but does not follow topographic features. Minor boundary adjustments could be made in Grove Creek to exclude the disturbed (hardrock minerals) area.

The majority of the non-conforming activities within the area would center around the possibility of future mineral management activities. Since the vast majority (19,950 acres) of the area is currently leased for exploration and development, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are as follows:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals located under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources

of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

There are no inholdings or other nonconforming uses within the area.

B. Resources

The discussion that follows refers to resources present within this roadless area other than the previously discussed wilderness resource.

TABLE C-13
ROADLESS AREA RESOURCE SUMMARY
LINE CREEK ROADLESS AREA

Area Description: 01911
Gross Acres: 20,680
Net Acres: 20,680

Description	Units	Value
Recreation		
Primitive	RVD's	0
SPNM	RVD's	500
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	320
Allotments	# of	1
AUM's	AUM's	105
Existing Vacant		
Suitable	Acres	400
Allotments	# of	1
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	4,900
Standing Volume	MBF	32,900
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	10,840
Winter Habitat	Acres	9,840
Specific — Elk		
Summer Habitat	Acres	5,720
Winter Habitat	Acres	3,840
Specific — Deer		
Summer Habitat	Acres	2,060
Winter Habitat	Acres	1,200
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	1,560
Winter Habitat	Acres	2,560
Specific — Mountain Goat		
Summer Habitat	Acres	1,500
Winter Habitat	Acres	2,240
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0

Description	Units	Value
Significant Fisheries		
Stream Miles	Miles	10
Stream Habitat	Acres	6
Lakes	# of	1
Lake Habitat	Acres	5
Water Developments		
Existing	# of	0
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	12,408
Low	Acres	8,272
Mining Claims	# of	17
Oil and Gas Potential		
Very High	Acres	0
High	Acres	20,680
Moderate	Acres	0
Low	Acres	0
Oil and Gas Leases		
Leases	# of	15
Leased Area	Acres	19,920

The area currently receives approximately 500 recreational visitor days (RVD's), but has an existing capacity to accommodate 5,800 RVD's.

The area contains parts of two livestock grazing allotments, one of which is currently vacant (non-stocked). It is estimated that the area contains 720 acres of suitable range which currently supports 105 AUM's of domestic livestock grazing. Fences are the only existing range improvements.

As previously mentioned, a small part of the area was logged in the early 1900's. It is estimated the area contains 4,900 acres of suitable timber. Estimated standing volume is approximately 33 MMBF.

The area is very important for the diversity of wildlife habitat that it supports. It provides 20,680 acres of summer and winter habitat for elk, deer, bighorn sheep, and mountain goats. Trout fishing is provided by some of the creeks. Line Lake, located on the Montana-Wyoming state line, provides limited lake fishing. There are no known threatened and/or endangered species present.

The area is considered to have a high potential for oil and gas and hardrock mineral development. Currently, there are 15 leases covering approximately 20,000 acres of the area. The area is rated as having a low to moderate potential for hardrock mining. Surface disturbance from copper exploration is evident in the South Fork of Grove Creek. There are currently 17 mining claims within the area.

The area contains important visual and scenic values as a backdrop to the Beartooth Highway (U.S. Highway 212).

Little information is available on the cultural resources of the area. However, it is believed that the area contains significant cultural resources.

C. Management Considerations

A wilderness classification is not expected to create problems in terms of fire management in this area. The area does not include any lands in private or other ownership.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from regional population centers in North and South Dakota. It is approximately 70 miles southwest of Billings, Montana, the largest town nearby.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

* Communities over 25,000

Chart 1 displays regional wilderness opportunities and the proximity to roadless areas on the Custer National Forest. U.S. 212 separates this area from the Absaroka-Beartooth Wilderness and from the Red Lodge Creek-Hellroaring Roadless Area. Additional roadless areas in Wyoming are adjacent to this area on the State line.

E. Contribution to the National Wilderness Preservation System

There are no vegetative habitat types, plant or animal species, or geologic types known to exist in this area that is not currently represented in existing wilderness areas.

F. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 5 responses referred to the Line Creek Plateau Area specifically. Interests expressed about this area focused on roadless management for the maintenance of wilderness characteristics.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more com-

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (areas)	Ashland (areas)	Grasslands (areas)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200
Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest					
			Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles					
	No. of Areas		4	0	0
	No. of Acres		897200	0	0
Wilderness Within 101-200 Miles					
	No. of Areas		3	5	1
	No. of Acres		742200	2525900	10700
Wilderness Within 201-300 Miles					
	No. of Areas		11	2	0
	No. of Acres		5482381	584300	0

ments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral

management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for

the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana, is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternatives

Table C-14 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness Management Prescription: Wilderness

This management prescription is totally assigned to this area in Alternatives 4, 5b, and 6b. Additionally, major portions of the area are assigned to this management prescription in Alternative 1 (19,950 acres), and Alternative 5a (16,456 acres). Under this prescription, the area would be managed as a roadless area, with due consideration for the oil and gas leases. No other activities would be permitted which would detract from the wilderness resource. When the lease obligations no longer exist, the area could then be considered for wilderness designation.

Oil and gas values, if any, on the areas not currently under lease would be forgone.

The harvest of timber would not be permitted. The value associated with the existing standing volume of approximately 33 mmbf would be forgone.

A wilderness allocation for this area would have an insignificant effect on the range resource due to the small amount of suitable range within the area.

Additional range improvements would not be undertaken to implement intensive management, but in this area these improvements are not needed.

Recreation opportunities would remain unchanged. Dispersed recreation, mainly hunting, would continue to be the dominant use.

Nonpriced values would be affected as follows:

TABLE C-14
MANAGEMENT EMPHASIS BY ALTERNATIVE
LINE CREEK PLATEAU ROADLESS AREA 1372

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE																
	Alternative																
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9	PA 10
Wilderness	19950			20680		16546	20680					20660					
Minimum Level (Roadless Mgmt.)		4134			2066	4137		1702	4609	1654		1266			4864	3856	4609
Timber Mgmt.			1702					2432		3210		1166		1702		278	
Winter Range/Timber	730								255				730	730	730	255	255
Recreation/Wildlife																	
Roadless Mgmt.		16546	18978		18614			16546	15816	15816		18248	19950	18248	15086	15816	15816
Summary of Management Emphasis:																	
Roaded																	
Decade 1	730		1702					2432	255	3210		1166	730	2432	730	1008	255
Decade 5	730		1702					2432	255	3210		1166	730	2432	730	1008	255
Roadless																	
Decade 1		20680	18978		20680	4134		18248	20425	17470		19514	19950	18248	19950	19672	20425
Decade 5		20680	18978		20680	4134		18248	20425	17470		19514	19950	18248	19950	19672	20425
Wilderness	19950			20680		16546	20680					20660					

- Wildlife habitat would remain at current levels.
- Elk and deer winter range would remain at present levels.
- Water quality would be maintained at current level.
- Soil and air would be maintained at current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would slightly increase in use.
- Acres in the National Wilderness System would increase.

The local economy has a strong reliance on recreation and tourism. The on-site use of this area is very minor in the total economic spectrum. People come to view the area, the scenery and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area.

Any oil and gas discovery could have significant effects on the local and area economy.

2. Designation: Nonwilderness Management Prescription: Minimum Level

Portions of the area are allocated to this prescription in Alternatives 2, 5, 5a, 5c, 6, 6a, 7, 8, 9, and 10 (the Proposed Action). The area allocated varies from 1,266 acres in Alternative 7 (6 percent) to 4,864 acres (24 percent) in Alternative 8.

Custodial management would be the theme of this management prescription. The area would remain roadless and undeveloped with no management induced outputs occurring. There would be no timber harvested, or new mineral leases issued. Grazing would be reduced as range improvements deteriorated. Recreation would be allowed to occur, but no new uses would be developed. Wildlife habitat would be left to naturally occur.

This allocation would not affect the wilderness qualities and attributes of the area since it would in all likelihood remain in a roadless condition.

Uses such as timber harvest would be affected in that it would not take place. The existing low level of grazing (106 AUM's) would continue but no management practices would be undertaken.

Wildlife in general would benefit from the reduced competition for forage and cover.

Nonpriced values would be affected as follows:

- Wildlife habitat values would increase slightly over time.
- Visual quality would continue as a natural landscape.
- Dispersed recreation opportunity setting would continue as semi-primitive, non-motorized.
- Although no acres would be added to the National Wilderness System, little or no wilderness attributes would be forgone.

The economic and social effects would be due to removing the timber from potential harvest and the loss of potential revenue from minerals leasing and/or production. It is estimated that these effects would be minor due to the amount of resources involved. Some small amount of employment would be lost. The local economic use of the area is more for outfitters and guides during the fall season. This classification would enhance their operations.

3. Designation: Nonwilderness Management Prescription: Recreation/ Wildlife/Roadless Management

A majority of the area is allocated to this prescription in Alternatives 2, 3, 5, 5c, 6, 6a, 7, 7a, 7b, 9, and 10 (the Proposed Action). The acres allocated under this prescription would remain essentially roadless and be managed to emphasize dispersed recreation uses, wildlife habitat and roadless management. Trails would be maintained to encourage recreation use. Public access to the area will be sought, if needed, to access the area. Prescribed fire could be used to manage wildlife habitat.

While this allocation would not result in an increase in wilderness acres, it would essentially preserve the wilderness attributes of the acres allocated to this prescription. Future wilderness designation would not be forgone. However, existing mineral leases would have to be honored.

The grazing of domestic livestock would be allowed to continue if it did not conflict with wildlife and/or recreation values.

Limited post, pole and fuelwood harvest could occur on the perimeter of the area if it did not involve road construction. No active timber sale program would be initiated.

Minerals management would be impacted by this prescription. New leases would not be issued. Minerals activity would not occur except to honor existing leases.

Dispersed recreation and wildlife values would be enhanced.

Nonpriced values would be affected as follows:

- Wildlife habitat would increase.

- Soil, air, and water quality would improve slightly.
- Visual quality would continue as a natural landscape.
- The dispersed recreation opportunity setting would remain as semi-primitive, non-motorized.
- No acres would be added to the National Wilderness System.

Most economic and social impacts would be positive since the local economies are somewhat based on recreation and wildlife activities.

4. Designation: Nonwilderness
Management Prescription: Wildlife
Winter Range/Timber

This prescription allows a full range of timber management activities including harvest, but only for the purpose of improving elk and deer winter range areas. This could also include the use of fire in timber stands to improve browse and other forage. Some roading could be involved to access the timber areas.

Alternatives 1, 6, 7a, 7b, 9, and 10 (the Proposed Action) allocate 730 acres or approximately 4 percent of the area to this prescription. None of the other alternatives utilize this prescription. The impacts and consequences in regard to wilderness or other resources is inconsequential. Some minor boundary adjustments could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

5. Designation: Nonwilderness
Management Prescription: Timber

This prescription allows for the management of the timber resource, to produce wood fiber. Portions of the area were logged at one time, and the trees will again reach maturity some 40-60 years from now. This prescription would involve roading the areas where timber products would be harvested. Basic values of soil, water and visual resources would be considered in the project design of any timber sale.

The timber resources of the area would be managed under the concept of sustained yield. Timber would be harvested under appropriate silviculture prescriptions. Timber harvest would impact the wilderness attributes of the area through roading and other management activities. It is possible that this prescription would result in the wilderness value being irretrievably forgone on portions of the area.

Existing oil and gas leases would be honored and development would be allowed to progress. Mineral leases could be developed in concert with timber management practices and activities.

Livestock forage will be maintained at current levels.

Nonpriced values would be affected as follows:

- Overall wildlife habitat values would decline slightly because of development.
- Elk and deer winter range would be maintained at current level.
- Water quality would slightly decrease over time.
- Soil and air quality would decrease slightly over time.
- Visual quality would slightly decrease as development occurs.
- Dispersed recreation would moderately increase as development occurs.
- Wilderness attributes will be lost of the areas treated by this prescription.

The harvest of trees for sawlogs, house logs, posts, poles, and fuel will meet a small local demand. Most cutting is done by individuals for themselves rather than commercial cutting. Local employment and suppliers will benefit, but to a limited degree. Local ranchers, and others who purchase boards and timber from local mills, will benefit, but the amount of product is minimal to the area's annual consumption. The suitable timber acres on the area are minimal and of minor significance in the long term. Without timber harvest, and associated road construction, the area would not be available for fuelwood collection for local residents.

LOST WATER CANYON 01362

GROSS ACRES — 9,800

NET ACRES — 9,800

I. INTRODUCTION AND DESCRIPTION

The Lost Water Canyon area is located approximately 45 air miles south of Billings, Montana in the extreme southeast corner of the Pryor Mountain unit of the Beartooth Ranger District of the Custer National Forest. Access is via U.S. Highway 310 and then by low standard Forest Service, County and BLM roads during the summer months. The area is bounded on the north, east, and west by National Forest lands. To the south, the area is bounded by BLM lands. The Bighorn National Recreation Area lies due east approximately 4 miles. The area is approximately 5.5 miles long, 3.0 miles wide, and has a southern exposure.

The area is characterized by deeply incised limestone canyons. Elevation ranges from 5200 to 8200 feet. The mean annual precipitation is approximately 6 inches in the extreme southern portion of the area, to approximately 20 inches in the higher elevations of the northern portion.

The area includes four major ecosystems. The largest ecosystem represented in terms of acreage is Douglas-fir with an understory of russet buffaloberry in the upper elevations and snowberry in the mid-elevations. The ecosystem located along the lower portions of Lost Water Canyon is the Douglas-fir/stream-side hardwoods, with mountain maple and aspen adjacent to the stream channel. Spruce are also present in the lower drainages. There are stringers of Douglas-fir/Limber Pine-grassland ecosystem present throughout much of the area along stream courses. There are several isolated mesas that are classified as subalpine ecosystems.

Generally, the area is perceived as important for pristine values as well as habitat for wild horses and the peregrine falcon, a threatened and endangered species. Consumptive type uses such as timber, forage for domestic livestock, and minerals are low.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

Prior to 1963, the extreme northern portion of the area was grazed by sheep. The extreme southeastern portion of the area is presently grazed by wild horses. A two-track road exists into Little Ice Cave

on the extreme east side of the unit. Other than these two intrusions, the area has been affected only by the forces of nature.

b. Natural Appearance

The grazing and management of wild horses has had little effect on the appearance of the area. The area appears much the same as it did many years ago, with the exception of the Little Ice Cave road. The two-track roads heal very slowly in the environment of the Pryor Mountains.

c. Solitude

The steep limestone cliffs and narrow creek bottoms provide good opportunities for challenging experiences and solitude.

d. Primitive Recreation Opportunities

The area has no trails or lakes, but does provide opportunity for hunting, hiking, and overnite camping. The steep canyons provide a physically challenging experience for the visitor.

e. Other Features

The limestone formations contain many small caves or "rock shelters." These caverns provide shelters and habitat for several small animals, including the short-eared bat.

The Lost Water Canyon drainage itself is very pristine and has been recommended as a Research Natural Area.

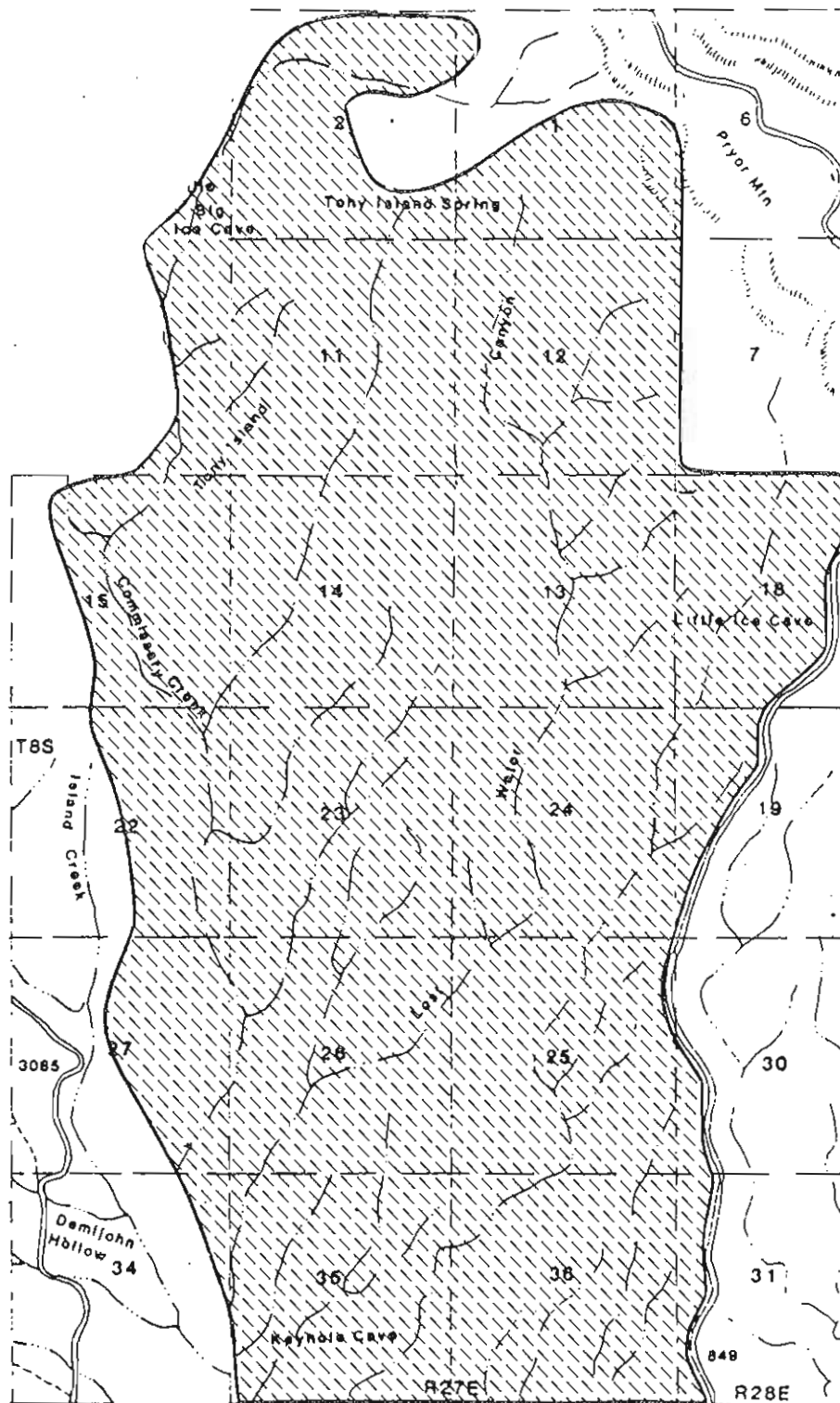
2. Wilderness Manageability and Boundaries

The Lost Water Canyon roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

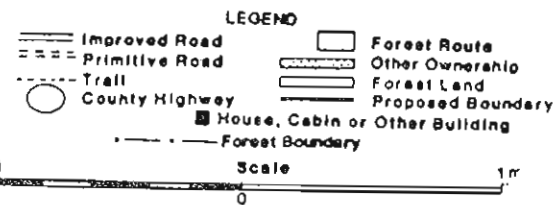
Gross Acres	Net Acres	
9,800	9,800	RARE II Inventory
0	0	Changes in inventory
9,800	9,800	1983 Roadless Inventory

The boundaries of this area are on ridgetops, along roads (on the east side), or other identifiable features for a majority of the area. The remainder of the boundary is along section lines or set back a distance from a road and is somewhat more difficult to define. Manageability and boundary identification could be enhanced by some minor changes in the extreme northeast corner.

There are no private inholdings within the area. The only known nonconforming use is 100 yards



01362 LOST WATER CANYON RARE II
Custer National Forest Beartooth Ranger District



of two-track road at Little Ice Cave. There are no current mineral leases within the area.

The management needs for the wild horse range and the proposed Research Natural Area must be considered, as well as the possible wilderness classification of adjacent BLM lands. It is believed that a wilderness classification would conflict somewhat with wild horse management because of some types of management practices such as aerial roundups and the associated impacts on the vegetation.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-15
ROADLESS AREA RESOURCE SUMMARY
LOST WATER CANYON ROADLESS AREA

Area Description: 001362
Gross Acres: 9,800
Net Acres: 9,800

Description	Units	Value
Recreation		
Primitive	RVD's	0
SPNM	RVD's	50
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	2,769
Allotments	# of	1
AUM's	AUM's	198
Existing Vacant		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	0
Standing Volume	MBF	0
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	6,860
Winter Habitat	Acres	2,940
Specific — Elk		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Deer		
Summer Habitat	Acres	6,860
Winter Habitat	Acres	2,940
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0

Description	Units	Value
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0
Significant Fisheries		
Stream Miles	Miles	0
Stream Habitat	Acres	0
Lakes	# of	0
Lake Habitat	Acres	0
Water Developments		
Existing	# of	0
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	0
Low	Acres	9,800
Mining Claims	# of	0
Oil and Gas Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	0
Low	Acres	9,800
Oil and Gas Leases		
Leases	# of	0
Leased Area	Acres	0

All acres identified as suitable for timber have previously been placed in the deferred category and removed from the timber base acres.

The area contains a very small portion of the Crooked Creek grazing allotment (115 acres), and the southeastern portion of the area is grazed by wild horses. It is estimated that the grazing capacity of this portion of the area is 115 animal unit months.

There are two known mineral claims in the area. The mineral potential for both hardrock and oil and gas is low. None of the area has been leased for oil and gas exploration.

The typical inhabitants of the area are pine squirrels, woodpeckers, and nuthatches. Lost Water Canyon provides 9,800 acres of summer and winter habitat for elk, deer, and bear, particularly in the northern portion of the area. However, the discontinuous and indistinct character of the game trails indicate the population of these larger animals is relatively low. The limestone rims provide habitat for raptors such as the golden eagle and the peregrine falcon. Two prairie falcon and one golden eagle nests have been identified.

There are some perennial springs within the area. The streams are mostly ephemeral, but approximately one mile of Lost Water Canyon is a perennial mountain stream which possibly could support a fishery.

It is estimated that the area has an existing capacity of 2,400 recreation visitor days (RVD's) but only produces 50 RVD's currently. Little Ice Cave attracts perhaps 200 visitors each season. Other uses are deer hunting, hiking, and nature study.

Much of the area is undisturbed and represents a near climax condition. The area is the easternmost extension of Douglas-fir and associated species in Region 1. It is the edge where the Forests are replaced by grasslands and Ponderosa Pine to the east. As such, portions of the area have a significant ecological value to the scientific community.

The area is expected to be rich in cultural resource values, although a complete survey of the area has not been performed.

C. Management Considerations

The management needs of the wild horse territory must be considered in any kind of allocation of the area.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is approximately 50 miles south of Billings, Montana, which is the nearest large population center. The following chart displays the proximity of all roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The Lost Water Canyon area is approximately 50 miles east of the existing Absaroka-Beartooth Wilderness which receives heavy use.

E. Contribution to the National Wilderness Preservation System

While not unique, the ecosystems present in the Lost Water Canyon area do represent the easternmost extension of Douglas-fir in Montana. Such ecosystems are not known to be represented in existing wilderness areas.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 6 responses referred to the Lost Water Canyon area specifically. Interests expressed about this area focused on roadless management or a recommendation for wilderness classification to protect wildlife and wilderness values. Respondents also cited the proximity of this area to adjacent Bureau of Land Management (BLM) lands which are being considered for wilderness as being important.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana is recreation and tourism. Areas in Montana most commonly mentioned as

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (acres)	Ashland (acres)	Grasslands (acres)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200
Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest					
			Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles					
No. of Areas		4	0	0	0
No. of Acres		897200	0	0	0
Wilderness Within 101-200 Miles					
No. of Areas		3	5	1	
No. of Acres		742200	2525900	10700	
Wilderness Within 201-300 Miles					
No. of Areas		11	2	0	0
No. of Acres		5482381	584300	0	0

supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-16 describes prescription assignment by alternative.

B. Environmental Consequences

- Designation: Wilderness
Management Prescription: Wilderness

The area would be managed as wilderness in its present roadless condition. No uses or activities

TABLE C-16
MANAGEMENT EMPHASIS BY ALTERNATIVE
LOST WATER CANYON ROADLESS AREA 1362

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE															
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9 PA 10
Wilderness	9800			9800		9800	9800		5000	9800	9800	9800	9800		9800	9800 5000
Minimum Level		9800	9800		9800			9800	4800					9800		4800
Summary of Management Emphasis:																
Roaded																
Decade 1																
Decade 5																
Roadless																
Decade 1		9800	9800		9800			9800						9800		4800
Decade 5		9800	9800		9800			9800						9800		4800
Wilderness	9800			9800		9800	9800		9800	9800	9800	9800	9800		9800	9800 5000

would be permitted which would detract from the wilderness resource. The Research Natural area could be established within the area.

This prescription is applied to the entire area in Alternatives 1, 4, 5a, 5b, 6, 6a, 6b, 7, 7a, 9, and 10 (the Proposed Action).

The timber values on the area would be forgone. The estimated quantity is not known but it is insignificant from a timber harvest standpoint.

Livestock forage values would be maintained at the current level, both for domestic livestock and for the wild horse range within the area.

The oil and gas values, if any, would be forgone.

Nonpriced components would be affected as follows:

- Wildlife habitat would be maintained or enhanced.
- Watershed values would be maintained at current level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation opportunity setting would change from semi-primitive, non-motorized to primitive.
- Increase in the acres in the National Wilderness System.
- Maintenance of habitat for the peregrine falcon.

The social and economic effects of wilderness classification would be minor or insignificant on the local economies. The single greatest effect would be to the scientific and education community to insure the preservation of a natural area for scientific study in the years to come.

2. Designation: Nonwilderness
Management Prescription: Minimum Level

This prescription allocates the area to minimum management of all resources. It would remain roadless because there would be no management induced outputs. The area now contains no trails or developments and no efforts would be made to accommodate visitors. There would be no timber sales, but firewood cutting might occur on the north and east sides next to existing roads.

This prescription is applied to the entire area in Alternatives 2, 3, 5, 5c, 7b and 8.

No planned timber harvest will occur.

The area contains only a small amount of one existing allotment. The small amount of grazing that currently occurs would continue, but no management activities would be undertaken on this portion of the allotment. Wild horse grazing would continue, but without specific management input by the Forest Service. This would probably be an insignificant impact since the BLM is currently the lead agency in the management of this resource.

Nonpriced components would be affected as follows:

- Wildlife habitat would be maintained or enhanced.
- Watershed values would be maintained at current level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation opportunity setting would remain as semi-primitive, non-motorized.
- Although the area would remain in a roadless condition, no increase in the acres in the National Wilderness System would be realized.
- Maintenance of habitat for the peregrine falcon.

There would be no noticeable social or economic effects from this prescription.

NORTH ABSAROKA 1371

	GROSS ACRES	NET ACRES
Gallatin National Forest	170,684	159,259
Custer National Forest	22,700	22,500
	193,384	181,759

I. INTRODUCTION AND DESCRIPTION

The North Absaroka Roadless Area is located on the perimeter of the Absaroka-Beartooth Wilderness Area in southwestern Montana. Some parts of the area are near Yellowstone National Park. The area is composed of 12 separate units, of which 10 lie on the Gallatin National Forest and 2 on the Custer National Forest. Most parts of 1371 consist of foothills, canyons, and lower slopes that mark a transition between the high rugged peaks of the Absarokas and the valley floors or plains on the north and west. The 1371 areas are generally more vegetated and less rugged than the high rock and alpine terrain of the Absaroka-Beartooth Wilderness that they border.

The Gallatin National Forest is the lead Forest for the evaluation of this roadless area. The 12 units lie in Park, Sweetgrass, and Stillwater counties.

Topography in this roadless area is highly variable, including steep river breaks, rocky peaks, alpine plateaus, glaciated valleys, and some gentler rolling mountains. Elevations range from 5,000 to 10,921 feet at Emigrant Peak. Average yearly precipitation ranges from about 20 to 50 inches depending on elevation and location. Climate is a cold continental type with short growing seasons.

Vegetation typically includes Engelmann spruce, cottonwood/alder communities along streams, Douglas-fir and lodgepole pine at mid to higher elevations, sometimes interspersed with fairly large parks of sagebrush or grass, and then sub-alpine fir and whitebark pine at higher elevations. Alpine meadows and turf ecosystems are also present above timberline on several thousand acres of this roadless area. Fires are usually under 100 acres in size, but large fires covering many thousands of acres occur every 300 years or so.

Generally, the 12 parts of 1371 have adequate access using State, county, and Forest roads with the exceptions of the Strawberry Creek unit on the Gallatin National Forest. This 14-mile long unit has access at present only at the extreme northern and southern tips. One trail access to George Lake is under construction. Due to extreme weather conditions most of the units of this area are accessible only during the summer months of the year.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Characteristics

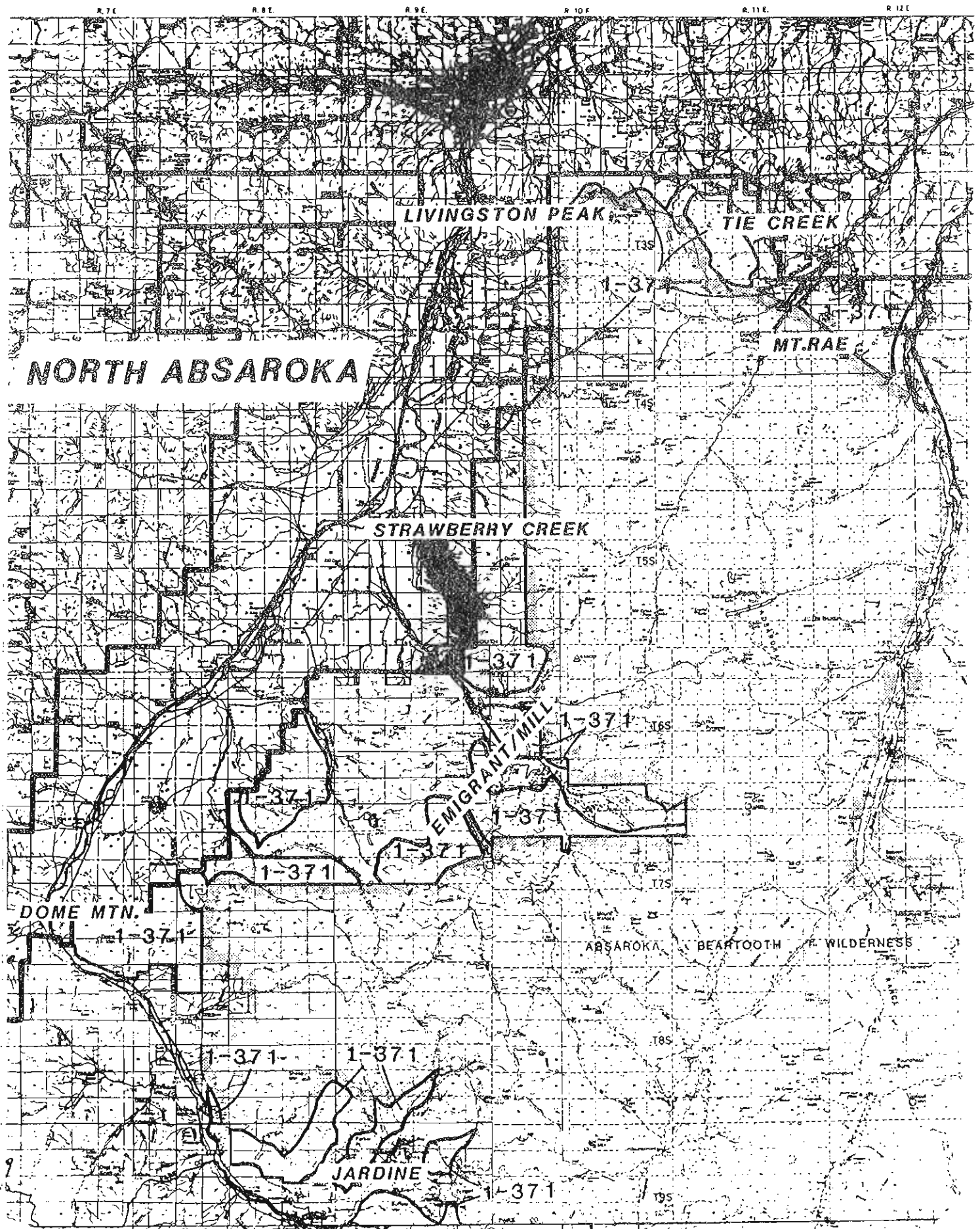
In a number of units of area 1371, the lands "retain primeval character . . . without permanent improvements or human habitation" as stated in the Wilderness Act. Areas such as Strawberry Creek, Dome Mountain, Mt. Abundance, and Meyers Creek show little or no evidence of human development or alteration. They also have "out-standing opportunities for solitude or a primitive and unconfined typed of recreation" (Wilderness Act).

Other parts of area 1371 contain evidences of man that would be healed by time or that could be corrected by boundary adjustment without affecting most of the area. Such areas would include Mineral Mountain, Tie Creek, or Mt. Rae. There are also some areas where evidence of man is more pervasive. The discussion that follows will better detail wilderness character and human impacts by areas.

Natural integrity of 1371 varies by area. The Jardine unit has been broken in 5 pieces in order to exclude 3 segments of the Eagle Creek Road and several segments of the Bear Creek and Darroch roads. The result has been to leave a number of separated parcels or peninsulas of unroaded land without any discernible core (see map).

The boundaries of the Emigrant-Mill unit have been altered to exclude several segments of new roads in Arrastra Creek, the North Fork of Sixmile Creek, and Emigrant Gulch, as well as several pieces of private land to which roaded access has been constructed or planned. This roading has divided the Emigrant-Mill area into 6 separate parcels. The area is essentially without a core. There is also evidence of intensive range management, such as jeep or pickup truck roads, along the north side of Sixmile Creek in the Emigrant-Mill unit.

The units of this roadless area on the Custer National Forest have some minor intrusion in the form of existing two-track roads and the evidence of past logging activities. There is an existing two-track road into the Dead Indian Spring area and the Wolverine Pass area. An old logging road extends up the lower part of Trout Creek.



Although there are evidences of mining activities outside and immediately adjacent to the southern part of the units on the Custer National Forest, there are no mining activities within the area. Domestic livestock grazing occurs on portions of four range allotments within the units, but there are only a very few range improvements. Internal impacts consist of approximately 6 miles of Forest Service maintained trails in the north units, and 200 acres of patented mineral claims in the southern units on the Custer National Forest.

In contrast, the natural integrity of the Strawberry Creek unit is unimpaired. A visitor would find the land "retaining its primeval character and influence" (Wilderness Act). The area presently has no roads or trails. One trail is presently being constructed to George Lake. Other areas with a high degree of natural integrity (i.e., little or no evidence of man's work) include Dome Mountain, Livingston Peak, Tie Creek, and Meyer Creek. A timber sale has been scheduled for 1985 within the Livingston Peak unit.

Several units of 1371 preserve a high degree of natural integrity in parts of their area, but show the "imprint of man's work" in other parts. Both the East Boulder and Deer Creeks segments have roaded corridors that penetrate to the core of the areas. However, the large size of these segments still allows sufficient remoteness to admit primitive recreation use in places.

The Mineral Mountain and Mt. Abundance pieces near Cooke City show evidence of past mining activity in places, but natural integrity is unimpaired in most of the areas. Some of these impacts of mining could be excluded by boundary change. Less extensive evidences of past and present mining affect natural integrity in parts of the Emigrant-Mill, Jardine, Deer Creeks, and East Boulder units.

Clearcutting of timber has a strong impact on the natural appearance of an area. Timber harvest has occurred in East Boulder, Emigrant-Mill, Deer Creeks, and Jardine, and is planned for Livingston Peak, Strawberry Creek, and Dome Mountain.

Generally, the natural appearance of most parts of 1371 is such that, when out of sight of localized impacts, "the imprint of man's work is substantially unnoticeable" (Wilderness Act). Exceptions would be areas heavily broken up by roaded corridors, such as Jardine or Emigrant-Mill. Most of the 1371 areas are far from cities or other built developments that would be visible or audible from within the area boundaries.

Most of the portions of 1371 meet size criteria for wilderness consideration because they are over 5,000 acres or are contiguous with the Absaroka-Beartooth Wilderness. Some segments are tangent to other roadless, such as the Meyer Creek or

Mineral Mountain areas. One piece of the Jardine segment is contiguous only to Yellowstone National Park.

Opportunities for solitude vary between units. Units with for attaining solitude in all or most of their area include Deer Creeks, East Boulder, Meyer Creek, Livingston Peak, Dome Mountain, Tie Creek, Strawberry Creek, and the Knowles Peak part of Emigrant-Mill. Areas with few or poor opportunities for solitude include the Jardine area; areas near Highways 89 and 212; areas bordering the Main Boulder, Mill Creek, and Iron Mountain roads; and the Daisy-Lulu Pass area. The rest of the area has fair potential for attaining solitude because of nearby towns, adjacent resource activity, limited size, or other factors. Solitude will diminish seasonally in some areas—for instance, hunting use is intensive in the Jardine area in fall and winter.

Primitive recreational opportunities are available in most of Area 1371 where remoteness criteria can be met. At present, recreational activities of a primitive character are ongoing in most parts of 1371. These include hunting, hiking, backpacking, horseback riding, and some fishing. Most of the units are remote or have limited access, and, therefore, receive little recreational use. Exceptions are parts of Jardine during hunting season or areas such as the Mill Creek drainage with well-established trailheads and popular trails. Generally, motorized use is light or nil in much of 1371 due to lack of access and rugged topography. However, snowmobile use is heavy in the segments of 1371 near Cooke City. The Mineral Mountain unit at present has more motorized use than nonmotorized use.

Some recreational activities in Area 1371 offer an element of challenge and risk. This would include mountain climbing, winter activities in avalanche areas, and hiking in the Management Situation I grizzly habitat. The frequency and risk of grizzly encounters will vary by time of year.

A distinctive feature of the area is the presence of 32,200 acres of grizzly bear occupied habitat. About 11,300 acres of this is Management Situation I habitat, which means frequent use by the big bears. This bear habitat occurs near Cooke City and Jardine.

The Mt. Rae unit contains an outstanding cultural resource. Not far from Baker Mountain is a shallow cave containing Indian pictographs. Also, vantage points in portions of the area provide panoramic views into the Absaroka-Beartooth Wilderness and Yellowstone National Park.

A notable geological feature is the so-called Stillwater Complex, a formation well-known for its reserves of platinum and palladium. Parts of the Complex are currently being explored and developed. The Stillwater Complex underlies all or part

of the East Boulder, Mt. Rae, and Meyer Creek units of 1371. If a major mine is developed in one of these areas, it would impact the roadless character of the land.

B. Wilderness Manageability and Boundaries

Most of the parts of 1371 have manageable boundaries located either on natural features or surveyed section lines. The Strawberry Creek unit is about half privately owned in a checkerboard pattern that makes for unmanageable boundaries. This unit also has a separated annex to the north of about 1,000 gross acres that is half in private ownership.

The shape of some areas would be a problem in managing them. Long slivers of land tangent to wilderness, or other roadless areas at one end only are found at Jardine, Emigrant-Mill, and Mt. Abundance. These form so-called "peninsulas" and would not be desirable for wilderness management under the guidelines.

The presence of roaded corridors breaking up some of the units would make a unified and integral management policy difficult to implement. The Jardine unit is split in 5 pieces, the Emigrant-Mill unit is in 6 pieces, and the Deer Creek unit is almost cut in half by the Iron Mountain Road.

The majority of the non-conforming activities within the area center around timber and mineral management activities. Since a portion of the area is leased for oil and gas exploration, all management emphases could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

C. Resource Values

The principal resource values found within this roadless area are listed in Table C-17.

Collectively, the 12 units comprising this roadless area contain a little over 56,000 National Forest

TABLE C-17
ROADLESS AREA RESOURCE SUMMARY
NORTH ABSAROKA ROADLESS AREA

Area Description: 01371

Value/Resource	Gallatin NF	Custer NF
Gross Acres	170,684	22,700
Net Acres	159,259	22,500
Recreation		
Primitive	9,000	600
Semi-primitive		
Non-motorized	44,000	0
Motorized	3,400	0
Range		
Suitable Ac.	20,700	5,537
No. Allotments	27	4
AUM's of Use	6,235	2,208
Timber		
Tentatively Suitable	56,021	4,513
Standing Volume (MMBF)	419.4	22.5
Wildlife/Fish		
Winter Range Habitat (Ac.)	47,500	4,900
Grizzly Situation I (Ac.)	9,503	2,240
Grizzly Situation II (Ac.)	20,989	1,280
*Species Present	D,E,BH,GB,BE	D,E,BH,GB
Stream Fisheries (Mi.)	29	6.5
Lake Habitat (Ac.)	0	0
Water Developments (No.)	13	0
Locatable Minerals (Potential)		
Very High (Ac.)	82,403	0
High (Ac.)	950	7,800
Moderate (Ac.)	6,195	14,700
Low (Ac.)	69,711	0
Claims & Patents (No.)	672	13
Oil and Gas (Potential)		
Very High (Ac.)	45,883	0
High (Ac.)	0	0
Moderate (Ac.)	40,765	7,800
Low (Ac.)	72,611	14,700
Leased (Ac.)	42,795	3,140
Lease Applications (Ac.)	26,343	0

* Code for wildlife species:

D — Mule Deer	MG — Mtn. Goat
E — Elk	M — Moose
BH — Bighorn Sheep	BE — Bald Eagle
GB — Grizzly Bear	

acres of suitable timberland with a standing volume of 419.4 MMBF on the Gallatin National Forest and 4,513 acres of suitable timberland with a volume of 225.1 MMBF on the Custer National Forest.

The Gallatin portion also provides 6,235 AUM's of grazing on 27 allotments. There are approximately 20,700 acres of suitable rangeland in this roadless area on the Gallatin. The Custer National Forest portion provides 2,208 AUM's from 5,537 acres of suitable rangeland on 4 allotments.

Area 1371 is important for wildlife as winter range for elk, bighorn sheep, and mule deer. The Gallatin's 10 units contain 47,500 acres of elk winter range and 49,400 acres of deer winter range. The Custer portion provides 2,000 acres of elk summer range and 4,900 acres of deer winter

range. Bighorn sheep tend to summer in high sites in the following units: Jardine, Dome Mountain, Emigrant-Mill, Strawberry Creek, Tie Creek, Mineral Mountain, and Mt. Abundance. Lower elevation sites in these areas contain some bighorn winter range. Total bighorn sheep winter range in 1371 is estimated at 23,522 acres.

Grizzly bear Management Situation I habitat is found in the Jardine (6,937 acres), Mineral Mountain (2,560 acres), and Mt. Abundance (1,800 acres) units. A total of 21,600 acres of grizzly bear Management Situation II lands are also found in the Jardine (5,016), Dome Mountain (8,576 acres), Emigrant-Mill (6,476 acres), Mineral Mountain (921 acres), and Mt. Abundance (600 acres) units. Situation II lands are used occasionally by the bear, but are not deemed essential to the bear's recovery.

Bald eagles are present along the Yellowstone River within 1 mile of the Dome Mountain and Jardine units. South-facing cliffs in the Meyers Creek area provide nesting structure suitable for peregrine falcons, and peregrines have been sighted in recent years 4 miles north of the area.

The area includes about 35 miles of fishery streams. Most of the stream fishery is located in Deer Creek (13.4 miles) and East Boulder (9 miles). No notable lake fisheries are found in the area.

Hardrock minerals potential is estimated to be very high on 87,213 acres, high on 5,760 acres, moderate on 11,005 acres, with the remainder of the area rated low. Potential for oil and gas development is very high on 57,851 acres, moderate on 47,178 acres, and low on the rest of the area. On the Gallatin part of this roadless area, some 42,749 acres have been leased for oil and gas exploration. Most of this is in the Deer Creek unit. An additional 6,400 acres have been applied for. The Custer National Forest has 3,140 acres leased for oil and gas.

Geothermal resources exist in this area, with 2,560 acres rated as "very high" potential for geothermal energy, 6,000 acres rated "high," and 8,550 acres rated "moderate."

Area 1371 contributes approximately 190,000 acre-feet of water annually to the Yellowstone River system. There are a total of 13 inventoried water developments, including water transmission lines, the Silver Gate municipal water supply, and similar uses. Water quality generally meets Montana's B-1 standards.

Primitive and semi-primitive nonmotorized recreation uses estimated at 9,000 and 44,000 RVD's of semi-primitive motorized use (primarily snowmobiling) also are estimated to occur in the Cooke City area. The Custer National Forest units are estimated to receive 600 RVD's of primitive recreation use in an average year.

D. Need

Area 1371 is generally more than a two-hour drive from population centers in Montana. Approximate highway mileages from seven Montana cities are given below as a range from the nearest to the farthest unit of the area's 12 separate land units.

1. Billings	81 to 178 miles
2. Bozeman	30 to 140 miles
3. Butte	113 to 226 miles
4. Great Falls	173 to 286 miles
5. Helena	130 to 240 miles
6. Livingston	4 to 114 miles
7. Missoula	230 to 340 miles

As mentioned earlier, most of the segments of this roadless area are contiguous with the Absaroka-Beartooth Wilderness Area. However, the Mineral Mountain Unit lies about 1 mile from the Absaroka-Beartooth Wilderness and is contiguous with Yellowstone National Park. One portion of the Jardine unit is contiguous with Yellowstone National Park. The Meyers Creek Unit on the Custer lies about 2 miles north of the Absaroka-Beartooth Wilderness. One parcel of land in the Emigrant-Mill unit is separated from the Absaroka-Beartooth Wilderness by 1½ miles. The Lee Metcalf Wilderness Area in the Madison Mountain Range is about 16 air miles from the Dome Mountain segment of Area 1371.

The North Absaroka Wilderness Area on the Shoshone National Forest in northwestern Wyoming lies less than 1 mile south of the Mineral Mountain segment of Area 1371.

The "Alternative Wilderness Proposal W" supported by the Montana Wilderness Association has advocated wilderness for Mt. Rae, Tie Creek, Livingston Peak, Strawberry Creek, and the southern two-thirds of Emigrant-Mill. Public interest in the other units of Area 1371 for wilderness does not appear to be high, partly because of the placement of the Absaroka-Beartooth Wilderness Area boundaries in 1978 which basically excluded them from wilderness classification at that time. Nearly all interest groups were in agreement not to include Meyers Creek, Deer Creek, East Boulder, Mineral Mountain, and Mt. Abundance units in the Absaroka-Beartooth Wilderness Area.

Comments on the 1985 Draft EIS for the Custer Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a road-

less management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana, is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

E. Contributions To the National Wilderness System

Taken in all, the 1371 Roadless Area contributes the following habitat types to the system:

- About 35 percent of the area is in various series of subalpine, with ABLA/CLPS, ABLA/VAS, and ABLA/VAGL the best represented.
- About 20 percent of the area is in the Douglas-fir series, with PSME/PHMA-PHM best represented.

- About 12 percent of the area is in GRASSLANDS and about 20 percent in in ROCKLAND.
- The remainder of the area is in small pockets of habitat types; this includes some stands of limber pine and Engelmann spruce.

The only habitat type that could be described as uncommon on the Gallatin National Forest is a small stand of ponderosa pine (PIPO/AGSP) in the Deer Creeks area. Some plants occur in the western units of the area that are unusual west of the Continental Divide. These include certain rare ferns, mooseberry, and beargrass.

Generally, the contribution of Area 1371 to the wilderness system would be to increase the size of the Absaroka-Beartooth Wilderness.

III. Alternatives and Environmental Consequences

A. Management Emphasis by Alternative

Environmental effects on Roadless Area 1371 will vary depending on which of the alternatives are selected for future management of the area. Table C-18 displays the acreage within the Absaroka Roadless Area that would be managed as developed, nonroaded, and wilderness in the 10 Gallatin alternatives. The Custer National Forest Plan alternatives that correspond to the Gallatin alternatives are as follows:

Gallatin Alternatives:

1 2 3 4 5 6 7 8 9 10

Custer Alternatives:

5 7 1,4 2 3 6,10 5a 6b 9

In Table C-18 the acreages shown in parentheses are the Custer NF portion of the total.

B. Environmental Consequences

1. Consequences Common to All Alternatives

Large portions of this area have been leased for oil and gas exploration. The leases are contracts, generally for 10 years, that allow access for exploration and development. If development was done it would be accompanied by road construction and construction of drill pads. Large portions of the roadless resource would be gone. The wilderness character of the developed area would diminish. Efforts could be made to mitigate the visual effects of the development if it were to happen.

2. Designation: Wilderness

Management Emphasis: Wilderness

Alternatives that allocate the area to wilderness range from the entire 181,758 acres to 64,700 acres to 0. Three of the Gallatin National Forest

TABLE C-18
MANAGEMENT EMPHASIS BY ALTERNATIVE
NORTH ABSAROKA ROADLESS AREA 1371

Gallatin/Custer National Forests (Area 01912)

Management Emphasis	Alternatives/Benchmarks (Thousands of Acres)										MAX PNV	MIN LVL
	1 (5)	2 (7)	3 (1)	4 (2)	5 (3)	6 (4)	7 (6,10)	8 (5a)	9 (6b)	10 (9)		
Developed												
Timber	38.2	31.7	2.0	24.2	17.7 (3.1)**	3.6 (1.0)	20.6	14.1	0	20.6 (1.3)	10.0	0
Dispersed Rec/Roaded	0	0	0	0	0	0	1.9	0	0	1.9	0	0
Big Game	0	0	0	2.7	0	0	3.0	0	0	3.0	0	0
Minerals		(.7)	0	(.7)	(1.6)	0	(.7)	0	0	(.7)	(1.6)	0
Nonroaded												
Dispersed Rec/Nonroaded	0	71.0	93.8	70.1	43.1	92.9	13.3	34.9	0	13.3	69.6	0
Dispersed Rec/Wildlife	24.2 (22.5)	24.3 (21.8)	54.0	28.8 (19.5)	16.9 (17.8)	64.4	40.4 (18.2)	24.3 (2.6)	0	40.4 (17.8)	49.2 (19.9)	0
Livestock Range	25.4	50.6	2.5	50.6	30.4	16.8	42.6	27.5	0	42.6	49.3	0
Minimum Level	95.0	3.6	5.2	5.4 (2.3)	9.1	3.1	60.1 (2.6)	3.5	0	60.1 (2.6)	3.7	181.8 (22.5)
Wilderness	0	0	22.5 (22.5)	0	64.7	0 (22.5)	0	77.5 (19.9)	181.8 (22.5)	0	0	0
SUMMARY												
Developed												
Decade 1	8.8	8.8 (.7)		7.5 (.7)	5.6 (4.7)	1.4	7.7 (1.7)			7.7 (2.0)	(1.6)	
Decade 2	8.8	8.8 (.7)		7.5 (.7)	5.6 (4.7)	1.4	7.9 (1.7)			7.9 (2.0)	(1.6)	
Roadless												
Decade 1	150.5 (22.5)	150.5 (21.8)	159.3	151.8 (19.5)	104.7 (17.8)	157.9	151.6 (20.8)	101.7 (2.6)		151.6 (20.4)	(19.9)	(22.5)
Decade 2	150.5 (22.5)	150.5 (21.8)	159.3	151.8 (19.5)	104.7 (17.8)	157.9	151.4 (20.8)	101.7		151.4 (20.4)	(19.9)	(22.5)
Wilderness					49.0			57.6 (19.9)	159.3 (22.5)			
TOTAL ACREAGE	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8		

alternatives allocate land to wilderness. Four of the Custer National Forest alternatives allocate all of their portion of the North Absaroka to wilderness. The pieces given this designation would be additions to the Absaroka-Beartooth Wilderness.

Wilderness allocation for these areas would add significantly to the wilderness resource on the Forest. In some cases, they would add a more logical boundary to the A-B Wilderness. The southeastern portion of the Mill Creek segment, which contains several wilderness trailheads, would fall into that category. In other cases the additional areas would cause less manageable boundaries. For instance, the Strawberry Creek area would include difficult-to-manage checkerboard ownership and would probably require a land exchange to render the area usable as wilderness.

Grizzly bear and big game habitat security would be maintained in this alternative. New trails or access points into the wilderness through these areas would be analyzed to determine their possible effects on the grizzly. Big game habitat could not be managed through timber harvest. Prescribed fire probably could not be used to

increase forage outputs on the 56,000 acres of winter range. Structural improvements such as fences could not be built to reduce competition between livestock and big game.

Livestock use levels could be maintained at their present levels of about 7,300 AUM's per year. Stock driveways would have to be maintained with nonmotorized equipment. Range administration and livestock tending would be done by horseback. A wilderness allocation would not preclude routine maintenance and reconstruction of fences, but may change the method of doing it. High country sheep allotments in the Absaroka would be affected, and the Deer Creek area which presently supports considerable grazing (6 allotments and 7,857 acres).

Vegetation management by timber harvest would not occur under this management emphasis. There are 60,500 acres of tentatively suitable timberland in these roadless areas. Approximately one half of this is in the Deer Creek area. The annual harvest from suitable lands in the North Absaroka area would be about 4 MMBF per year, or 20 percent of the total harvest for the Gallatin National Forest.

Oil and gas leases have been issued on 45,800 acres. If exploration and development were to take place, at least a portion of this area would lose its wilderness character.

Three options to retain the wilderness characteristics of the area are:

- Honor the lease until expiration and if no discovery is made do not reissue.
- Buy back the lease through congressional initiatives.
- Negotiate with the lease holder to relinquish the lease or accommodate the wilderness resource to the extent possible.

Non-priced resource values would be affected, as follows:

- Water quality would remain high.
- Big game and grizzly habitat security would be maintained.
- Opportunity for motorized recreation use would be eliminated.
- Existing visual conditions would be retained.
- Access to some of the private land would be more difficult.

3. Designation: Nonwilderness
Management Emphasis: Nonroaded
Management Prescriptions: Minimum Level/Dispersed Recreation Wildlife/Dispersed Recreation Nonroaded/Range.

In all alternatives except 5, 8, and 9, the majority of land is allocated to nonroaded prescriptions. This type of alternative would be most similar to the current management.

The largest amount of recreational use in this roadless area is of a nonmotorized, semi-primitive type. This type of use would continue under this management emphasis. Motorized use would also continue. Much of the recreation use is in conjunction with hunting and fishing. These two activities would continue because hunting opportunity would remain high and water quality would remain good.

In this alternative, the roadless resource would remain essentially intact. Some roads could be built to private inholdings. If oil and gas development were to occur, there would be road construction and the roadless character of pieces of the area would be lost. This could be minimized if, as part of the exploration and development stipulations, it was required that roads be obliterated after use was completed.

Tentatively suitable timber lands would not be available for harvest under these prescriptions. However, these same lands would be re-evaluated in the next round of forest planning to determine if they are suitable. The timber

resource would not be irretrievably lost. Some vegetation manipulation by prescribed fire could be used. Fire could be used to improve wildlife habitat and it also could be used to reduce the risk of large wildfires and outbreaks of insects and disease.

Nonpriced resources that would be affected are as follows:

- Grizzly bear security would be maintained.
- Big game habitat would be maintained.
- Water quality and fisheries habitat would be good.
- Minerals exploration and development could take place.
- Visual quality would continue as a natural landscape.
- Although no acres would be added to the National Wilderness System, little or no wilderness attributes would be forgone unless existing mineral leases were developed.

4. Designation: Nonwilderness
Management Emphasis: Roaded
Management Prescriptions: Dispersed Recreation Roaded/Big Game/Timber

The Forest Plan alternatives allocate between 2,000 acres and 38,200 acres to these prescriptions. Alternative 2 allocates 31,700 acres, Alternative 4 allocates 24,200 acres, and Alternatives 7 and 10 allocate 25,500 acres to these roading and timber management prescriptions. Portions of the units on the Custer National Forest are designated to this type of a prescription in Alternatives 3, 6, 7a, and 9. Alternative 6 designates the least amount (1,020 acres or 5 percent) while Alternative 7a designates the most (3,658 acres or 16 percent).

Implementation of this prescription would result in the development and roading of at least a portion of the total area. The wilderness attributes within parts of the area would be forgone.

These prescriptions would develop and manage the land for timber production. The single largest part of the roadless area with these prescriptions would be the Deer Creek. The East Boulder, Tie Creek, Livingston Peak, and Emigrant-Mill areas would also be developed for timber management. These areas could contribute some timber annually to the local mills.

Roading activities in these areas would also provide opportunity for more motorized recreation activities such as motorbiking and snowmobiling. Some areas would become more accessible for hunting. This could provide for improved game management.

Habitat security for big game would decrease. Hunting opportunity could increase as more

roads are constructed. Timber harvest in occupied grizzly habitat would be coordinated so that grizzly security would be maintained. This could increase the cost of timber management and would reduce the freedom of the timber operator to carry out his activities.

Some transitory livestock forage would be created on grazing allotments, especially in the Deer Creek area. Forage for big game would also result from timber harvest and could occur on the key winter range areas.

Nonpriced resource values that would be affected are as follows:

- Visual quality would be reduced.
- Diversity of recreation would increase.
- Water quality would decrease.
- Risk of fire and insects would be reduced.
- Oil and gas exploration and development would be easier.
- Roadless and wilderness characteristics would be lost.
- Wildlife habitat diversity on timber management lands would be increased.
- Grizzly bear security would be maintained.

RED LODGE CREEK-HELLROARING 01363

GROSS ACRES — 14,760

NET ACRES — 14,760

I. INTRODUCTION AND DESCRIPTION

Situated between the West Fork and the Main Fork of Rock Creek, this area is located 5 miles southwest of Red Lodge, Montana, and approximately 65 miles southwest of Billings, Montana. Access is via U.S. Highway 212 and then by Forest System roads. The area is bounded by U.S. Highway 212 on the south, private land on the east, and the West Fork of Rock Creek Road on the north. To the west, the area is joined by the existing Absaroka-Beartooth Wilderness Area.

Elevation varies from 9,600 feet on Silver Run Plateau to 6,200 feet along the West Fork of Rock Creek. The western part of the area includes a small portion of the Silver Run Plateau. From the plateau, the area plunges in a northeast and southeast aspect. The topography varies from steep, glaciated timbered canyons to some small areas of dry alpine meadows near timberline. Except for these small areas, the entire area is timbered.

The primary tree species are lodgepole pine, Douglas-fir, alpine fir, and whitebark pine. The area includes portions of the following ecosystems: dry alpine, subalpine forest, subalpine meadow, krumholz, Douglas-fir/lodgepole, and bunchgrass. The major portion of the unit was burned in the 1870-1880 era, and nearly all accessible areas of fire-killed lodgepole pine were logged in the 1890-1910 era. Logging occurred in Cyclone, Silver Run and Basin creeks, and recently a small amount in Sheep Creek.

The area is important summer and winter habitat for elk, deer, and, to a lesser extent, moose. Approximately half of the area is considered as winter range and this area is the only winter range on the National Forest within the West and Main Forks of Rock Creek. Basin Lake, situated in the northwest corner of the area, is the only lake with a fishery in this area. It receives heavy use from hikers and fishermen.

The area borders the Absaroka-Beartooth Wilderness and contains five developed trails that access the Absaroka-Beartooth Wilderness.

With the exception of a few areas, the entire unit is timbered. Present use consists mostly of fall big-game hunting, fishing in Basin Lake, and ski touring.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

This roadless area has some intrusions such as old skid trails which still remain visible. Internal impacts are limited to approximately 15 miles of Forest Service developed trails and the Lake Fork Road and trailhead in the extreme southwest corner of the area. Although these developments do impact the natural integrity of the area, long-term ecological processes have not been appreciably altered.

b. Natural Appearance

The appearance of this area has been influenced by natural processes with some impacts by man. Although the naturalness of the area is impacted by the previously mentioned skid trails, road, and hiking trails, visitors to the area would feel that the greater portion maintains a natural appearance. The trails in Silver Run and Basin Creek are old logging roads. The dendritic pattern of logging skid trails is quite obvious to the viewer from outside the area, but much less obvious to the visitor inside the area. It is difficult to find any stumps left from the logging, and young trees are taking over the old trails. Several old miners' cabins may be found in Ingles Creek, along with the miners' "diggins." There are range fences in the Woods Gulch area, but no water developments.

c. Solitude

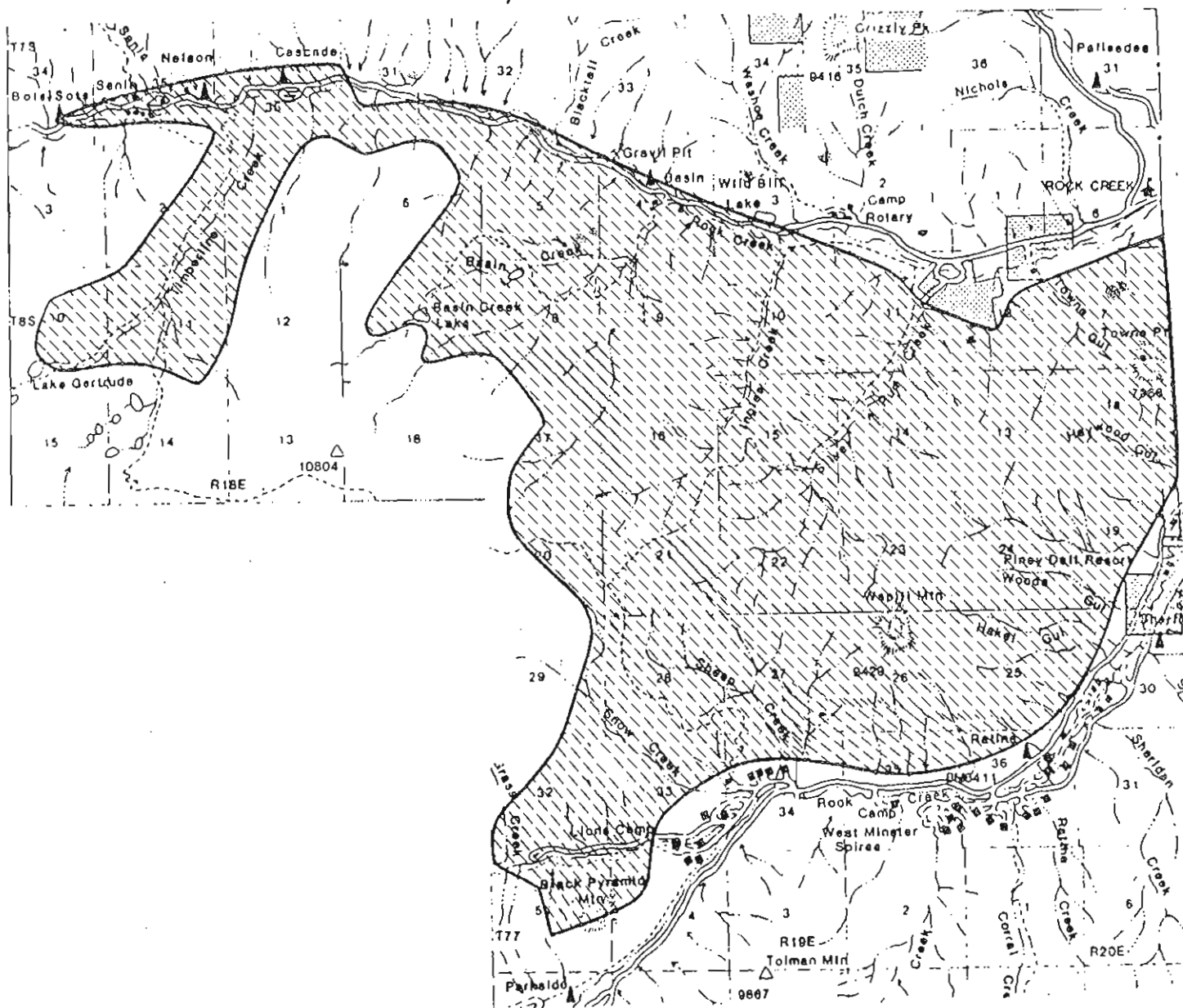
From certain areas, traffic on the West Fork of Rock Creek, Lake Fork of Rock Creek, and U.S. Highway 212 is visible. However, opportunities for solitude do exist over the greater portion of this area.

d. Primitive Recreation Opportunities

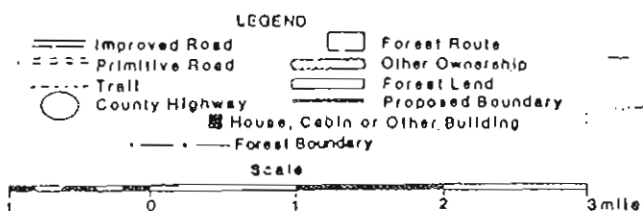
There is good potential for primitive recreation opportunities within this Roadless Area. Although the area does not possess a large diversity in topography, it does possess some rugged and challenging terrain. Hiking cross-country would be physically challenging and would demand skills normally associated with a wilderness environment. Basin Lake is the primary destination point within the area, but it is accessed by a developed trail.

e. Other Features

From certain vantage points in the area there are panoramic views of the Pryor Mountains. An old



01363 RED LODGE CR-HELLROARING
Custer National Forest Boartooth Ranger District



logging camp is still in evidence in the Basin Creek area. This area contains the Basin Creek Lakes National Recreation Trail.

2. Wilderness Manageability and Boundaries

The Red Lodge Creek-Hellroaring Roadless Area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. As noted below there have been some changes in the acreage for this area. These changes have resulted due to the dividing of this area into 2 additional areas and the inclusion of some acres into the Absaroka-Beartooth Wilderness.

Gross Acres	Net Acres	
28,280	28,280	Original Roadless Area
- 4,000	- 4,000	Included into A/B Wilderness
- 9,520	- 9,520	Included into Roadless Areas 01364 and 01913
14,760	14,760	1983 Roadless Inventory

The western boundary of the roadless area is the Absaroka-Beartooth Wilderness boundary, which is a meandering line described by elevations. If this essentially roadless area would be included, the same situation would exist. The southern boundary would have to be adjusted to exclude the Lake Fork Road, the Snow-Sheep Creek summer home areas, and the Silver Run roaded area on the north side. The end result would be a meandering line not easily identified on the ground.

If the roadless area is allocated to wilderness, the National Recreation Trail designation would be removed.

The northern portion of this area drains into the West Fork Rock Creek. The West Fork Rock Creek has been designated as a Municipal Watershed for the town of Red Lodge, Montana. Management activities and resource allocations must consider this designation. Also, a portion (8,246 acres) of the area is leased for oil and gas exploration and development. All management emphasis could be affected by minerals activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.

- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals located under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

B. Resources

The discussion that follows refers to resources present within the Roadless area other than the previously discussed wilderness resource.

TABLE C-19
ROADLESS AREA RESOURCE SUMMARY
RED LODGE CREEK-HELLROARING ROADLESS AREA

Area Description: 01363
Gross Acres: 14,760
Net Acres: 14,760

Description	Units	Value
Recreation		
Primitive	RVD's	0
SPNM	RVD's	300
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	320
Allotments	# of	1
AUM's	AUM's	106
Existing Vacant		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	5,320
Standing Volume	MBF	10,000
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	7,877
Winter Habitat	Acres	6,883
Specific — Elk		
Summer Habitat	Acres	3,441
Winter Habitat	Acres	5,120
Specific — Deer		
Summer Habitat	Acres	4,436
Winter Habitat	Acres	1,763
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0

Description	Units	Value
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0
Significant Fisheries		
Stream Miles	Miles	2.5
Stream Habitat	Acres	15
Lakes	# of	1
Lake Habitat	Acres	5
Water Developments		
Existing	# of	0
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	7,380
Low	Acres	7,380
Mining Claims	# of	1
Oil and Gas Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	14,760
Low	Acres	0
Oil and Gas Leases		
Leases	# of	6
Leased Area	Acres	8,246

The area provides 14,760 acres of summer and winter habitat for elk, mule deer, and, to a lesser extent bighorn sheep and moose. Upper Basin Lake is a brook trout fishery. The lower portion of Silver Run Creek is used by migratory trout for spawning habitat. The area contains no habitat for any threatened or endangered species.

The area contains 5,320 acres of suitable timber, mainly lodgepole pine and Douglas-fir. The estimated standing volume is 10 mmbf.

There are 320 acres of suitable range within the area which supports 106 permitted animal unit months of grazing. This unit contains a portion of one grazing allotment.

There are no mineral resource activities operating at this time. However, the entire area has been leased for oil and gas exploration and development. It is estimated that the area has a moderate potential for the discovery of oil and gas. There is one mining claim within the area. It is estimated that the area has a low to moderate potential for hardrock mining.

The area now receives an estimated 300 recreational visitor days (RVD's) annually, but has the potential to accommodate 5,000 RVD's. Upper Basin Lake is the major destination point within the area for summertime use, with elk and deer hunting accounting for 50 percent of the annual recreation use.

Cultural resources have not been inventoried on this unit and no known cultural resource sites exist.

C. Management Considerations

There are no special resource considerations that apply to this area. There are no private lands within the area, and the use of fire would not be precluded by a wilderness designation.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from population centers in North and South Dakota. It is approximately 65 miles southwest of Billings, Montana, which is the largest nearby city.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The area borders the existing Absaroka-Beartooth Wilderness. It is estimated that use of the Absaroka-Beartooth Wilderness will reach capacity by the mid 1990's. Albeit small, the addition of this area to the National Wilderness System could help meet future demand for primitive recreation.

E. Contribution to the National Wilderness Preservation System

There are no vegetative habitat types, plant or animal species, or geologic types known to exist in this area that are not currently represented in existing wilderness areas.

F. Public Interests and Concerns

In September 1983 the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in these areas. Of the responses received, only 4 referred to this area specifically. Interest expressed about this area focused on the need for a wilderness or roadless designation to protect the integrity of the existing Absaroka-Beartooth Wilderness. The final allocation through the RARE II process was non-wilderness.

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (areas)	Ashland (areas)	Grasslands (areas)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200
Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest					
			Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles					
	No. of Areas		4	0	0
	No. of Acres		897200	0	0
Wilderness Within 101-200 Miles					
	No. of Areas		3	5	1
	No. of Acres		742200	2525900	10700
Wilderness Within 201-300 Miles					
	No. of Areas		11	2	0
	No. of Acres		5482381	584300	0

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a road-

less classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individ-

uals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana, is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternatives

Table C-20 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

The Red Lodge Creek-Hellroaring Roadless Area is allocated totally to a wilderness prescription in Alternatives 1, 4, 6b, and 7a. Parts of the area are allocated to wilderness in Alternative 2 (229 acres), in Alternative 5a (10,666 acres), in Alternative 8 (7,539 acres), and in Alternatives 6 and 10 (the Proposed Action) (950 acres). The Timberline Creek drainage is designated to this management prescription in Alternative 10 (the Proposed Action).

A wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing or potential uses and facilities. No future construction of roads would be permitted. The harvest of the existing timber volume, estimated to be approximately 10 mmbf, would be forgone.

TABLE C-20
MANAGEMENT EMPHASIS BY ALTERNATIVE
RED LODGE CREEK-HELLROARING ROADLESS AREA 1363

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE																
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8	9	PA 10
Wilderness	14760	229		14760		10666			950		14760		14760				950
Minimum Level (Roadless Mgmt.)		4217			1054	2784	5578	1035	3442	2722					7221	3980	3442
Minerals		88	202								87					202	
Wildlife Winter Range/Timber			3738		1528	494		1515	2222	2998		1563		3878		1285	2222
Recreation/Wildlife Roadless		10226	10820		12178	816	9182	12210	8946	8953		13198		10882	7539	9293	8946
Summary of Management Emphasis:																	
Roaded																	
Decade 1		88	3940		1528	494		1515	2222	3085		1563		3878		1487	2222
Decade 5		88	3940		1528	494		1515	2222	3085		1563		3878		1487	2222
Roadless																	
Decade 1		14443	10820		13232	3600	14760	13245	11588	11675		13197		10802	14760	13273	11588
Decade 5		14443	10820		13232	3600	14760	13245	11588	11675		13197		10802	14760	13273	11588
Wilderness	14760	229		14760		10666			950		14760		14760	0			950

The grazing of domestic livestock would be allowed to continue. Since the area grazed within this area by livestock is so small, no adverse impacts are anticipated.

Wildlife habitat would not be significantly affected under a wilderness prescription. Possible disturbance of wildlife due to human activity would be eliminated due to the elimination of motorized traffic, although hunting would still be allowed. Wildlife habitat would change primarily through natural ecological succession as affected by grazing and fire management.

A wilderness prescription would affect the future minerals management program on the area. If existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Economic effects could be significant. The potential for oil and gas reserves in the area is rated as moderate and the loss of revenues from mineral leasing and future production could be significant.

The nonpriced benefits affected are as follows:

- Existing visual quality would be maintained.
- Security for big game would increase.
- Increase in acres in the National Wilderness System.
- The recreational opportunity setting would change from semi-primitive, non-motorized to primitive.
- The soil, air, and water quality for the area would remain high.

2. Designation: Nonwilderness
Management Prescription: Minimum Level

Portions of the area are allocated to this prescription in Alternatives 2, 5, 5a, 5b, 5c, 6, 6a, 8, 9, and 10 (the Proposed Action). The amount allocated varies from 1,035 acres (7 percent) in Alternative 5c to 7,221 acres or 49 percent in Alternative 8. Custodial management would be the theme of this management prescription. The area would remain roadless and undeveloped and management induced outputs would decrease. There would be no timber harvested, or new mineral leases issued. Grazing would be reduced as range improvements deteriorated. Recreation would be allowed to occur, but no new uses would be developed. Wildlife habitat would be left to occur naturally.

This allocation would not affect the wilderness qualities and attributes of the area since it would in all likelihood remain in a roadless condition.

Uses such as timber harvest would be affected in that these uses would not take place or be phased out. The existing low level of grazing (106 AUM's) would continue but no management practices would be undertaken.

Wildlife in general would benefit from the reduced competition for forage and cover.

Nonpriced values would be affected as follows:

- Wildlife habitat values would increase slightly over time.
- Grizzly bear habitat would be maintained at current level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation opportunity setting would continue as semi-primitive, non-motorized.
- Although no acres would be added to the National Wilderness System, little or no wilderness attributes would be forgone.

The economic and social effects would be due to removing the timber from potential harvest and the loss of potential revenue from minerals leasing and/or production. It is estimated that these effects would be minor due to the amount of resources involved. Some small amount of employment would be lost. The local economic use of the area is more for outfitters and guides during the fall season. This classification would enhance their operations.

3. Designation: Nonwilderness
Management Prescription: Minerals

Alternatives 2, 3, 6a and 9 allocate a small and insignificant portion of the total area to this prescription. None of the other alternatives utilize this prescription. The impacts and consequences in regards to wilderness or other resources is inconsequential. Some minor adjustments in the boundary could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

4. Designation: Nonwilderness
Management Prescription: Winter Range/Timber

Alternatives 3, 5, 5a, 5c, 6, 6a, 7, 7b, 9, and 10 (the Proposed Action) allocate varying amounts of the area to this prescription. Alternative 5a allocates the least amount (494 acres or 3 percent) while Alternative 7b allocates the most (3,878 acres or 26 percent).

This prescription allows the harvest of timber products to enhance forage production and winter range habitat for wildlife.

This management prescription, while maintaining some traditional management emphasis (wildlife habitat) on the area, would change the current management direction for at least portions of the area. The suitable timber on the northern portion of the area would be harvested to accomplish certain wildlife management objectives. This would result in at least a portion of the area becoming roaded. In general, timber would be harvested to meet the goals and objectives of wildlife.

Allocation to this prescription would forgo the possibility of wilderness allocation on a small part of the area by the end of the second decade. The suitable timber would be scheduled for harvest up to the limit of the considerations for wildlife under this prescription. The amount of the area roaded would probably be a small part of the overall area. The boundaries could be adjusted to exclude this area and still have a manageable unit that could be designated as wilderness or added to the existing adjacent wilderness.

This allocation would have no significant effects on domestic livestock production since such a small part of the area is grazed by livestock.

This prescription would also result in the development of the area in terms of minerals. Preplanning would be needed to lessen the potential impacts on the wildlife values. If exploration resulted in production of oil and gas reserves, a future wilderness classification would in all probability be precluded on at least portions of the area.

Recreation opportunities would change as the area became roaded. Although hunting would probably remain as the primary recreational activity, recreationists would have motorized access to parts of the area.

The economic and social effects would be insignificant due to the amount of the area allocated to this prescription in most of the alternatives. Possible minerals production would mean an increase in local employment.

The nonpriced benefits are as follows:

- Visual impacts to the landscape would increase.
- Security for big-game would decrease slightly in the area.
- The recreational opportunity setting would change from semi-primitive, non-motorized to roaded natural.
- Local employment would increase slightly.
- Loss of the wilderness attributes on at least a portion of the area.
- No additional acres would be included in the National Wilderness System.

5. Designation: Nonwilderness Management Prescription: Recreation/ Wildlife/Roadless Management

Portions of this area are allocated to this management prescription in every alternative except Alternatives 1, 4, 6b, 7a, and 8. Alternative 5a allocates the least amount (816 acres or 6 percent) while in Alternative 5c, 12,210 acres (83 percent) are allocated.

The acres allocated under this prescription would remain essentially roadless and be managed to emphasize dispersed recreation uses and wildlife habitat. Trails will be maintained to encourage recreation use. Public access to the area will be sought, if needed, to access the area. Prescribed fire could be used to manage wildlife habitat.

While this allocation would not result in an increase in wilderness acres, it would essentially preserve the wilderness attributes of the acres allocated to this prescription. Future wilderness designation would not be forgone.

The grazing of domestic livestock would be allowed to continue if it did not conflict with wildlife and/or recreation values.

Limited post, pole and fuelwood harvest could occur on the perimeter of the area if it did not involve road construction.

Minerals management would be impacted by this prescription. New leases would not be issued. Minerals activity would not occur except to honor existing leases.

Dispersed recreation and wildlife values would be emphasized.

Nonpriced values would be affected as follows:

- Wildlife habitat would slightly increase.
- Grizzly bear habitat would be maintained at current level.
- Water, soil, and air quality would be maintained at current level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would increase slightly in use and the dispersed recreation opportunity setting would remain as semi-primitive, non-motorized.
- No wilderness attributes will be forgone, but no acres would be added to the National Wilderness System.

Most economic and social impacts would be positive since the local economies are somewhat based on recreation and wildlife activities.

ROCK CREEK 01913

GROSS ACRES — 200

NET ACRES — 200

I. INTRODUCTION AND DESCRIPTION

Situated between Hellroaring Creek and Lost Picket Creek on the eastfacing slope of Main Rock Creek, this area is 15 miles southwest of Red Lodge, and 80 miles southwest of Billings, Montana. Access is via U.S. 212 and Forest System roads. This long slender tract of land is bordered on the east by Rock Creek, on the west by the Absaroka-Beartooth Wilderness, and on the north by the Hellroaring Plateau road. It is 1½ air miles north of the Wyoming-Montana state line.

Elevation varies from 7,800 at Rock Creek to 9,800 on the boundary, and the distance is less than one-half mile. This near vertical face is a rock-outcrop forest ecosystem, with lodgepole pine at Rock Creek, grading to alpine fir and whitebark pine near timberline at 9500 feet. Very little vegetation exists except for the trees, but there are occasional little pockets of grasses and forbs where the soil has accumulated.

The area is used for spring and summer habitat for bighorn sheep, but most use occurs early in the spring before people start using the heavily developed area along Rock Creek.

There are no trails or other improvements along this face. At the very northwest corner, on top of the Hellroaring Plateau, minerals exploration for chromite has occurred and caused significant disturbance. Present use of the area is nearly nonexistent because of terrain and the ability to access the plateau area via the Hellroaring road. The general area is accessible during the May-October period in most years.

Climbing the face, one looks south into Wyoming at Beartooth Pass, or directly across the canyon at the switchbacks of U.S. 212 (Beartooth Highway). The scenic view is impressive because of the steep terrain. Most of the viewed area was burned in 1948, and only minor amounts of tree reproduction has occurred.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

Other than the plateau area near the junction of the Plateau road and wilderness boundary, the area contains no evidence of man's activities.

b. Natural Appearance

The appearance of this area has been influenced by natural forces and processes, except for the few acres in the extreme northwest corner.

c. Solitude

There is little opportunity for solitude in this unit. It is directly across Rock Creek Canyon from the Beartooth Highway which accesses the northeast entrance to Yellowstone Park. In addition this area contains only 200 acres.

d. Primitive Recreation Opportunities

This area offers a physical challenge to traverse or climb, but offers little opportunity for a casual hike. It would be difficult to find a flat place large enough to place a tent for an overnite camp.

e. Other Factors

The area offers an excellent panorama of the upper Rock Creek Canyon and of the steep face of the Beartooth switchbacks. At no point in this area would one be out of sight of a developed area or highway.

2. Wilderness Manageability and Boundaries

The Rock Creek roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

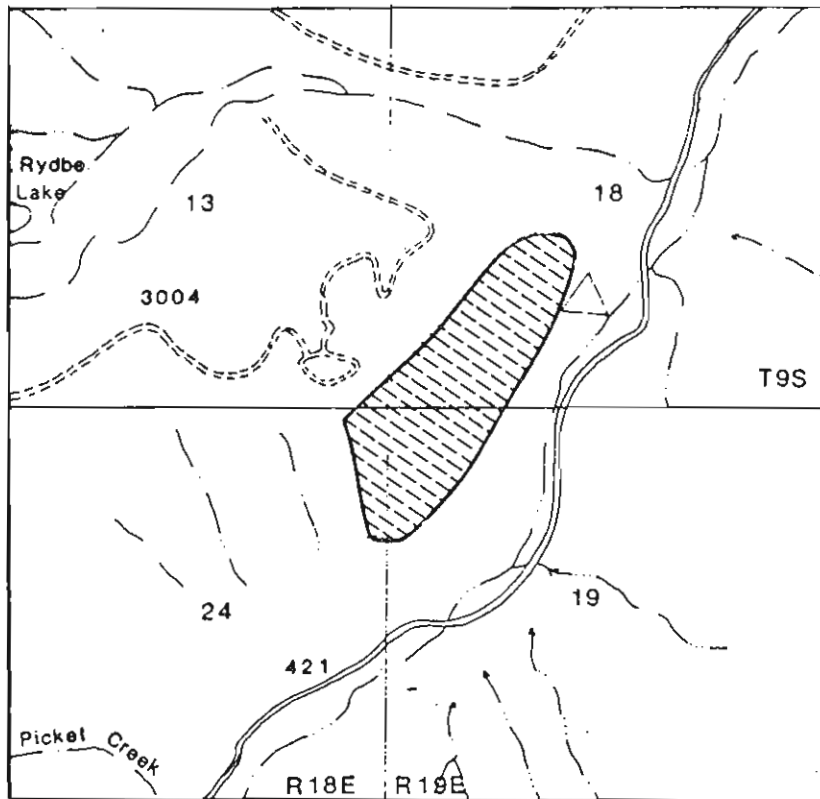
Gross Acres	Net Acres	
200	200	RARE II Inventory
200	200	1983 Roadless Inventory

The boundary of the Absaroka-Beartooth Wilderness is not well defined in this area. The roadless area is well defined on the southern and eastern sides, but includes an area of minerals disturbance on the northeast corner on Hellroaring Plateau. Other portions of the minerals exploration disturbance are inside the wilderness. The addition of this area would not affect the manageability of the wilderness resource or wilderness boundary.

There are no private inholdings in this area, and there are no current mineral leases within the area. The steep face upon which this area is located will likely remain unchanged and unoccupied, regardless of land classification.

B. Resources

The discussion that follows refers to resources present within the Roadless Area other than previously discussed wilderness resources.



01913 ROCK CREEK
Custer National Forest Beartooth Ranger District

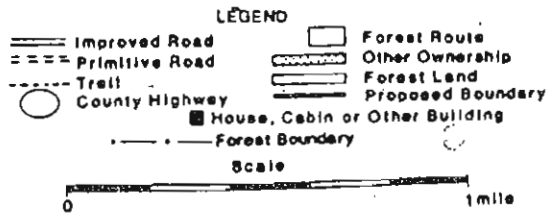


TABLE C-21
ROADLESS AREA RESOURCE SUMMARY
ROCK CREEK ROADLESS AREA

Area Description: 01913
 Gross Acres: 200
 Net Acres: 200

Description	Units	Value
Recreation		
Primitive	RVD's	10
SPNM	RVD's	0
SPM	RVD's	0
Roaded Natural	RVD's	0
Range		
Existing Obligated		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Existing Vacant		
Suitable	Acres	0
Allotments	# of	0
AUM's	AUM's	0
Proposed		
Suitable	Acres	0
AUM's	AUM's	0
Timber		
Tentative Suitable	Acres	0
Standing Volume	MBF	0
Corridors		
Existing and Potential	# of	0
Wildlife — Big Game		
Summer Habitat	Acres	150
Winter Habitat	Acres	50
Specific — Elk		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Deer		
Summer Habitat	Acres	50
Winter Habitat	Acres	0
Specific — Antelope		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Specific — Bighorn Sheep		
Summer Habitat	Acres	150
Winter Habitat	Acres	0
Specific — Mountain Goat		
Summer Habitat	Acres	0
Winter Habitat	Acres	0
Wildlife — Threatened and/or Endangered		
Grizzly Bear		
Habitat-Management Situation I	Acres	0
Habitat-Management Situation II	Acres	0
Habitat-Management Situation III	Acres	0
Bald Eagle		
Habitat	Acres	0
Black-Footed Ferret		
Habitat	Acres	0
Significant Fisheries		
Stream Miles	Miles	0
Stream Habitat	Acres	0
Lakes	# of	0
Lake Habitat	Acres	0
Water Developments		
Existing	# of	0
Minerals		
Hardrock Potential		
Very High	Acres	0
High	Acres	100
Moderate	Acres	100
Low	Acres	0

Description	Units	Value
Mining Claims	# of	3
Oil and Gas Potential		
Very High	Acres	0
High	Acres	0
Moderate	Acres	200
Low	Acres	0
Oil and Gas Leases		
Leases	# of	0
Leased Area	Acres	0

The area contains limited spring and winter range for bighorn sheep, and mule deer make some use of the area in the summer. There are no streams or fishery resources. The area contains no known habitat for any threatened or endangered species.

The area contains no quantity of merchantable timber, although there are a few lodgepole trees on the eastern edge next to Rock Creek.

There is no forage for domestic livestock, nor is there any livestock use permitted in this area.

The mineral claims on and adjacent to the northwest boundary attest to the existence of chromite ore. Tests made in the 1950's indicate it is a medium to low quality ore.

This area produces only 10 recreational visitor days (RVD's) annually, but has the existing capacity to produce 25 RVD's.

This area has not been inventoried for cultural resources. No known cultural resource sites exist.

C. Management Considerations

There are no resource management considerations that apply to this area. There is no private land within the area. The use of fire would not generally be used in this area to accomplish management objectives.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from population centers in North and South Dakota. It is only 80 miles from Billings, Montana, which is the largest nearby city.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The area borders the existing Absaroka-Beartooth Wilderness. It is estimated that the Absaroka-Beartooth Wilderness will reach capacity by the mid 1990's. Albeit small, the addition of this area to the national wilderness system could help meet future demand for primitive recreation.

**REGIONAL POPULATION CENTERS* AND
PROXIMITY TO ROADLESS AREAS ON
THE CUSTER NATIONAL FOREST**

Population Centers	Less Than 50 Miles		51-100 Miles		101-200 Miles		201-300 Miles	
	Areas	Acres	Areas	Acres	Areas	Acres	Areas	Acres
Billings, MT	10	98080	0		2	23400	10	118700
Rapid City, SD	0		0		12	142100	1	9800
Bismarck, ND	0		0		10	118700	2	23400
Fargo, ND	0		0		0		0	

*Communities over 25,000

**CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST**

Wilderness Name	General Location	Acres	Proximity to Roadless Areas		
			Beartooth (areas)	Ashland (areas)	Grasslands (areas)
Selway-Bitterroot	Western Montana/ North-Central Idaho	251443 1089238			
Gospel Hump	Central Idaho	206000	250	425	550
River of No Return	Central Idaho	2239000			
Bob Marshall	Northwestern Montana	1009400			
Great Bear	Northwestern Montana	286700			
Mission Mountains	Northwestern Montana	73900	250	350	450
Scapegoat	Northwestern Montana	239300			
Gates of the Mountain	Central Montana	28600	200	300	600
Rattlesnake	West-Central Montana	20000	225	400	475
Welcome Creek	West-Central Montana	28100			
Anaconda Pintlar	Southwestern Montana	157900	200	350	450
Lee Metcalf	South-Central Montana	232500	75	250	400
Absaroka-Beartooth	South-Central Montana	920400	0	200	325
North Absaroka	Northwestern Wyoming	350900	50	200	350
Washakie	Northwestern Wyoming	686600	100	200	350
Teton	Western Wyoming	557300			
Glacier Primitive Area	Western Wyoming	6500			
Fitzpatrick	Western Wyoming	192100	175	225	400
Bridger	Western Wyoming	392200			
Popo Agie (Primitive Area)	Western Wyoming	71300			
Cloud Peak (Primitive Area)	North-Central Wyoming	136900	150	100	250
Black Elk	Southwestern South Dakota	10700	300	150	200

Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest

	Beartooth	Ashland	Grasslands
Wilderness Within 100 Miles			
No. of Areas	4	0	0
No. of Acres	897200	0	0
Wilderness Within 101-200 Miles			
No. of Areas	3	5	1
No. of Acres	742200	2525900	10700
Wilderness Within 201-300 Miles			
No. of Areas	11	2	0
No. of Acres	5482381	584300	0

E. Contribution to the National Wilderness Preservation System

There are no vegetative habitat types, plant or animal species, or geologic types known to exist in this area that are not currently represented in existing wilderness areas.

F. Public Interests and Concerns

In September 1983 the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in these areas. Of the responses received only 4 referred to the Rock Creek area specifically. Interest expressed about this area focused on maintaining the area in a roadless or wilderness status to protect the integrity of the adjacent Absaroka-Beartooth Wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next 10-year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Mon-

tana stated that the economic base of the town of Red Lodge, Montana, is recreation and tourism. Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternatives

Table C-22 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness Management Prescription: Wilderness

The area is allocated to a wilderness prescription in Alternatives 1, 4, 6b, and 7a. This prescription allocates the area to remain in a roadless condition, with a recommendation to Congress for inclusion with the Absaroka-Beartooth Wilderness.

Oil and gas values, if any, on the areas not currently under lease would be forgone.

The area contains no merchantable timber values.

No domestic livestock grazing is now permitted on the area.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at current level.
- Water quality would be maintained at current level.
- Soil and air would be maintained at current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would be maintained at current level.
- The recreation opportunity setting would change from semi-primitive non-motorized to primitive.

TABLE C-22
MANAGEMENT EMPHASIS BY ALTERNATIVE
ROCK CREEK ROADLESS AREA 1913

Management Prescription	ACRE ALLOCATION BY ALTERNATIVE														
	1	2	3	4	5	5a	5b	5c	6	6a	6b	7	7a	7b	8
Wilderness	200			200							200		200		
Minimum Level (Roadless Mgmt.)		200			200	200	200	200	200	200					200
Recreation/Wildlife Roadless Mgmt.			200									200		200	
Summary of Management Emphasis:															
Roaded															
Decade 1															
Decade 5															
Roadless															
Decade 1		200	200		200	200	200	200	200	200		200		200	200
Decade 5		200	200		200	200	200	200	200	200		200		200	200
Wilderness	200			200							200		200		

- Acres in the National Wilderness System would be increased.

The economic and social impacts would be insignificant. The local economy has a strong reliance on recreation and tourism. The on-site use of this area is very minor in the total economic spectrum. People come to view the area, the scenery, and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area.

2. Designation: Nonwilderness
Management Prescription: Minimum Level

This prescription allocates the area for no management induced outputs. Recreation use would be allowed. The very steep terrain precludes all use except hiking, rock climbing and other activities of that nature. The area is designated to this management prescription in Alternatives 2, 5, 5a, 5b, 5c, 6, 6a, 8, 9, and 10 (the Proposed Action).

The area contains no merchantable timber values.

No domestic livestock grazing is now permitted on the area.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at current level.
- Water quality would be maintained at current level.
- Soil and air quality would be maintained at current high level.
- Visual quality would continue as a natural landscape.

- Dispersed recreation would be maintained at current level.
- No wilderness attributes will be forgone with this prescription, but no acres would be added to the National Wilderness System.

The economic and social impacts would be insignificant. The local economy has a strong reliance on recreation and tourism. The on-site use of this area is very minor in the total economic spectrum. People come to view the area, the scenery, and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area.

3. Designation: Nonwilderness
Management Prescription: Recreation/
Wildlife/Roadless Management

The entire area is allocated to this prescription in Alternatives 3, 7, and 7b. No other alternative utilizes this prescription.

This allocation would maintain the traditional values and management emphasis for the area. The area will likely remain in its current condition regardless of the prescription applied due to topography and resource potentials of the area.

The area contains no merchantable timber values.

No domestic livestock grazing is now permitted on the area.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at current level.

- Water quality would be maintained at current level.
- Soil and air quality would be maintained at current high level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would be maintained at current level.
- No wilderness attributes will be forgone with this prescription, but no acres would be added to the National Wilderness System.

The economic and social impacts would be insignificant. The local economy has a strong reliance on recreation and tourism. The on-site use of this area is very minor in the total economic spectrum. People come to view the area, the scenery, and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area.

1892

2 1 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

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1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

WEST OF WOODBINE 01369

GROSS ACRES — 2,000

NET ACRES — 2,000

I. INTRODUCTION AND DESCRIPTION

This triangular-shaped area lies north and west of the Woodbine Campground and trailhead, on the west side of the Stillwater River some 8 miles southwest of Nye, Montana, and approximately 85 miles west-southwest of Billings, Montana. Access is via State route 78 and State secondary highway 419 and Forest roads. The area is bounded on the southeast by the Stillwater Road, on the southwest by the Absaroka-Beartooth Wilderness, and on the north by the minerals exploration road west of the Mountain View chrome mine.

Elevation varies from about 5200 feet at Woodbine trailhead and 5100 feet on the northeast corner to 9100 feet on the Wilderness boundary on the west side of the unit. The entire unit is east-facing slopes draining into the Stillwater River. One small, unnamed stream flows from the area. The area is very steep for the most part, with Douglas-fir and grass on the lower slopes grading to scattered trees then talus rock and rock faces at the upper elevation with clumps of alpine fir trees where any soil exists.

The lower 1000 feet elevation is critical bighorn sheep and mule deer winter habitat. It is a favorite spot to view and photograph bighorn sheep.

There are no trails or other improvements within the area. An REA power line traverses the boundary on the northeast corner, between the Beartooth Ranch and private lands in Verdigris Creek north of the area. A Forest Service trail exists on the northwest boundary of the unit.

The area is very rugged and scenic as viewed from the Stillwater Road or Woodbine Campground. With the exception of the northwest corner of the unit, the visitor would be looking down upon highly developed areas with roads, buildings and campgrounds.

The present use is primarily day hikes from the campground, visitors along the east boundary on FDR 400 to view and photograph big game, and a very limited amount of fall big game hunting. Stillwater Road FDR 400 is paved and is open year-long.

The area is blanketed with hardrock mineral claims, and is adjacent to the Stillwater Mineral Complex.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

This area has no intrusions that extend more than 100 yards west from FDR 400 along the east boundary (recreation residences and their access roads).

b. Natural Appearance

The appearance of this area has been influenced only by nature.

c. Solitude

The south and west portions consist of one slope facing the developed area and does not offer the opportunity for solitude. Only the northwest quarter of the area has topographic and vegetative screening to create the opportunity for solitude. The distance from perimeter to core is less than 1 mile.

d. Primitive Recreation Opportunities

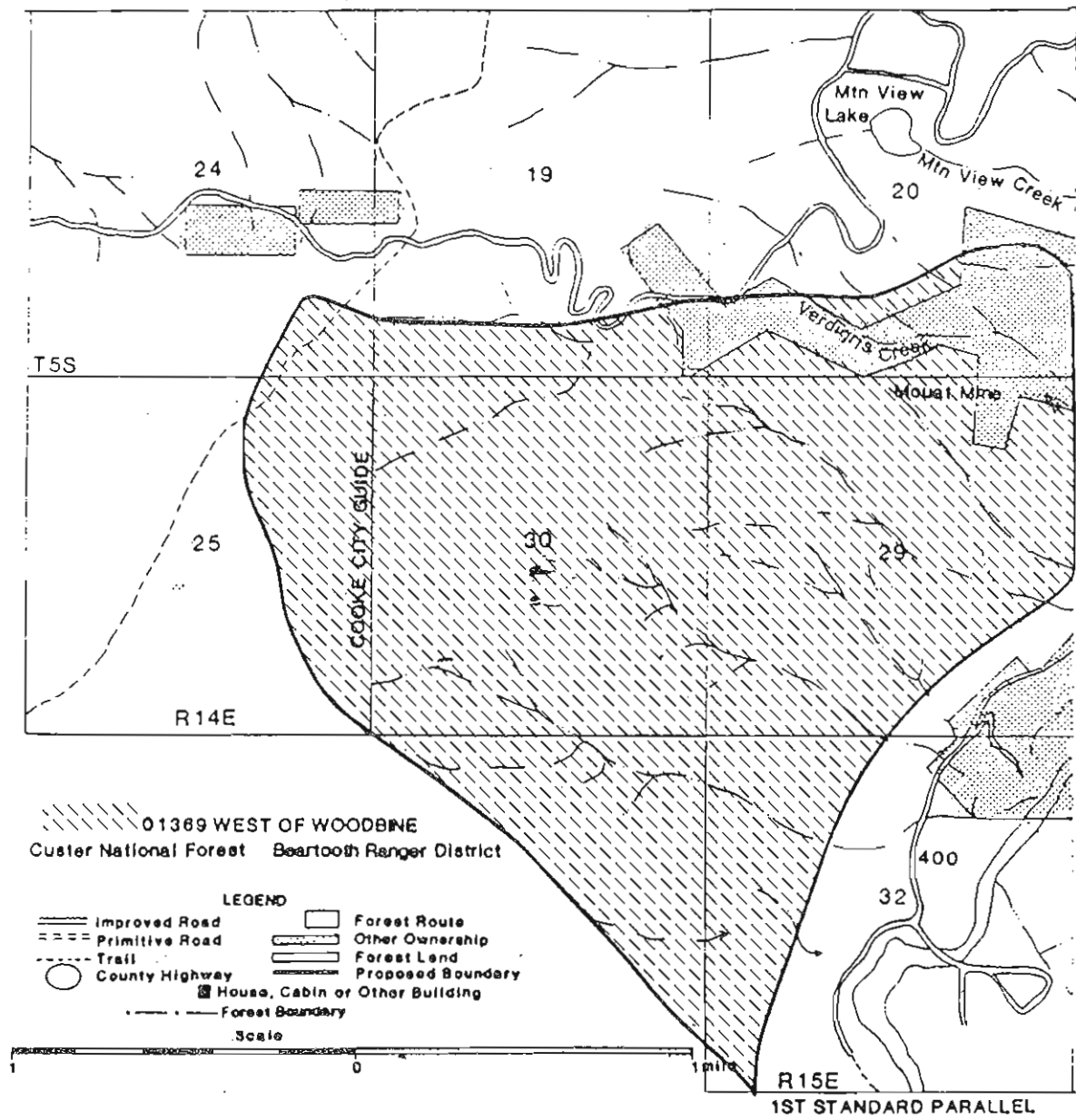
There are no destination points within the unit, or other specific attractions. The granite rock talus and outcrops create an opportunity for very challenging rock climbs and some technical climbing. Camping and overnite use within the area is almost nonexistent at the present time. The primary visitor attraction is the bighorn sheep on the winter range.

2. Wilderness Manageability and Boundaries

The West of Woodbine roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process as a part of Area 1371. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------|
| 2,000 | 2,000 | RARE II Inventory |
| 2,000 | 2,000 | Final |

The roadless area is easily defined, but is adjacent to recreation residences, a road, a guest ranch, private property, and areas disturbed by minerals exploration. The addition of this area would not make the wilderness boundary more manageable. The majority of the non-conforming activities within the area center around mineral related activities. Since a portion (1,330 acres) of the area is leased for oil and gas exploration, all management emphasis could be affected by oil and gas



activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals located under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management. The area is considered to be a part of the Stillwater Complex, a known mineralized area.

There are no private lands within the area.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed Wilderness resource.

The area contains limited wildlife habitat for mule deer, but it is important summer and winter range for bighorn sheep. It is estimated that the area contains approximately 1,024 acres of bighorn sheep summer range as well as 300 acres of winter range. There is no fishery resource nor is there any known threatened or endangered species using the area.

TABLE C-23
ROADLESS AREA RESOURCE SUMMARY
WEST OF WOODBINE ROADLESS AREA

Area Description: 01369
Gross Acres: 2,000
Net Acres: 2,000

| Description | Units | Value |
|----------------|-------|-------|
| Recreation | | |
| Primitive | RVD's | 50 |
| SPNM | RVD's | 0 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |

| Description | Units | Value |
|---|-------|-------|
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 240 |
| Allotments | # of | 1 |
| AUM's | AUM's | 0 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 559 |
| Standing Volume | MBF | 4,013 |
| Corridors | | |
| Existing and Potential | # of | 0 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 1,456 |
| Winter Habitat | Acres | 544 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 732 |
| Winter Habitat | Acres | 244 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 1,024 |
| Winter Habitat | Acres | 300 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | 0 |
| Black-Footed Ferret | | |
| Habitat | Acres | 0 |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 1,000 |
| High | Acres | 1,000 |
| Moderate | Acres | 0 |
| Low | Acres | 0,000 |
| Mining Claims | # of | 103 |
| Oil and Gas Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 2,000 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 1 |
| Leased Area | Acres | 1,330 |

The area contains 559 acres of tentatively suitable timber ecosystems, with a standing volume of 4.0 million board feet. However, harvest opportunities would be very limited at the present time because of steep terrain. The primary species are lodgepole pine and spruce.

Due to the extreme steepness of the terrain, there is limited suitable range for domestic livestock grazing. No domestic livestock use is permitted.

The area is considered to have a high potential for hardrock minerals in the Stillwater Complex, and is blanketed with mineral claims. The area is considered to have a moderate potential for oil and gas development.

The area produces an estimated 50 recreational visitor days (RVD's) annually, but has an existing capacity to produce 500 RVD's. The primary use is viewing, photographing, and hunting big game.

The area has not been inventoried for cultural resources and there are no known cultural resource sites present.

C. Management Considerations

Management of fire in this area is not expected to create problems.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from population centers in North and South Dakota. It is approximately 85 miles southwest of Billings, Montana, which is the largest nearby city.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

| Population Centers | Less Than 50 Miles | | 51-100 Miles | | 101-200 Miles | | 201-300 Miles | |
|--------------------|--------------------|-------|--------------|-------|---------------|--------|---------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The area borders the existing Absaroka-Beartooth Wilderness.

2. Contribution to the National Wilderness Preservation System

There are no vegetative habitat types, plant or animal species, or geologic types known to exist in this area that is not currently represented in existing wilderness areas.

3. Public Interests and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, four responses referred to the West of Woodbine Area specifically. Interests expressed about this area focused on roadless management to protect the integrity of the adjacent wilderness, and adding the area to the wilderness for more control of the uses which might occur.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for many of the roadless areas in Montana. Although more comments were received concerning the management of the roadless areas in North Dakota, many comments were received pertaining to the roadless areas in the Montana portion of Custer National Forest.

Many of the commenters expressed the opinion that all of the remaining roadless areas in Montana should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. Potential road building associated with possible timber and mineral management activities drew the most criticism from the public. Numerous people argued that "there are too many roads now" or "where do we draw the line in roading of public lands." Concerns were expressed about possible impacts on wildlife habitat, increased sedimentation, and destruction of the scenic beauty and recreational opportunities afforded in roadless areas. The economics of road building and associated timber management activities were also questioned, especially in unroaded areas. Several individuals commented specifically on proposed timber harvest activities in the North Absaroka Area (01371). As a result of these comments, this part of the next ten year timber sale program for the Forest was dropped. Some suggested that "dispersed, non-motorized recreation is what people want." Some commenters expressed concern over the perceived effects of oil and gas exploration and development especially in the Line Creek Area (01911). Many expressed the opinion that these activities would have adverse effects on wildlife habitat and the Greater Yellowstone Ecosystem. Some of the respondents from Montana stated that the economic base of the town of Red Lodge, Montana, is recreation and tourism.

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|---|---|---------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(acres) | Ashland
(acres) | Grasslands
(acres) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443 | | | |
| Gospel Hump | Central Idaho | 1089238 | | | |
| River of No Return | Central Idaho | 206000 | 250 | 425 | 550 |
| Bob Marshall | Northwestern Montana | 2239000 | | | |
| Great Bear | Northwestern Montana | 1009400 | | | |
| Mission Mountains | Northwestern Montana | 286700 | | | |
| Scapegoat | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Gates of the Mountain | Central Montana | 239300 | | | |
| Rattlesnake | West-Central Montana | 28600 | 200 | 300 | 600 |
| Welcome Creek | West-Central Montana | 20000 | 225 | 400 | 475 |
| Anaconda Pintlar | Southwestern Montana | 28100 | | | |
| Lee Metcalf | South-Central Montana | 157900 | 200 | 350 | 450 |
| Absaroka-Beartooth | South-Central Montana | 232500 | 75 | 250 | 400 |
| North Absaroka | Northwestern Wyoming | 920400 | 0 | 200 | 325 |
| Washakie | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Teton | Western Wyoming | 686600 | 100 | 200 | 350 |
| Glacier Primitive Area | Western Wyoming | 557300 | | | |
| Fitzpatrick | Western Wyoming | 6500 | | | |
| Bridger | Western Wyoming | 192100 | 175 | 225 | 400 |
| Popo Agie (Primitive Area) | Western Wyoming | 392200 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 71300 | | | |
| Black Elk | Southwestern South Dakota | 136900 | 150 | 100 | 250 |
| | | 10700 | 300 | 150 | 200 |
| Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest | | | | | |
| | | | Beartooth | Ashland | Grasslands |
| Wilderness Within 100 Miles | | | | | |
| No. of Areas | | | 4 | 0 | 0 |
| No. of Acres | | | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | | | |
| No. of Areas | | | 3 | 5 | 1 |
| No. of Acres | | | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | | | |
| No. of Areas | | | 11 | 2 | 0 |
| No. of Acres | | | 5482381 | 584300 | 0 |

Areas in Montana most commonly mentioned as supported for classification in the National Wilderness system were Line Creek Plateau (01911) and Lost Water Canyon (01362).

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the Absaroka-Beartooth Wilderness. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternatives

Table C-24 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Under this prescription, the area would be managed as wilderness with due consideration for the existing oil and gas leases. Hardrock mineral

TABLE C-24
MANAGEMENT EMPHASIS BY ALTERNATIVE
WEST OF WOODBINE ROADLESS AREA 1369

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | |
|---------------------------------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 |
| Wilderness | 2000 | | | 2000 | | 2000 | | 2000 | | | | | | 2000 | |
| Minimum Level (Roadless Mgmt.) | | 384 | | | | | 438 | | 437 | 384 | 384 | | | | 439 |
| Recreation/Wildlife | | | | | | | | | | | | | | | |
| Roadless | | 1616 | 2000 | | 2000 | | 1562 | | 1563 | 1616 | 1616 | 2000 | 2000 | | 1561 |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | |
| Roaded | | | | | | | | | | | | | | | |
| Decade 1 | | | | | | | | | | | | | | | |
| Decade 5 | | | | | | | | | | | | | | | |
| Roadless | | | | | | | | | | | | | | | |
| Decade 1 | | 2000 | 2000 | | 2000 | | 2000 | | 2000 | 2000 | 2000 | 2000 | 2000 | | 2000 |
| Decade 5 | | 2000 | 2000 | | 2000 | | 2000 | | 2000 | 2000 | 2000 | 2000 | 2000 | | 2000 |
| Wilderness | 2000 | | | 2000 | | 2000 | | 2000 | | | | | | 2000 | |

exploration would be allowed within existing laws and regulations. No other uses or activities would be permitted which would detract from the wilderness resource. When the oil and gas leases no longer exist, the area would be returned to near natural conditions.

This prescription is applied to the entire area in Alternatives 1, 4, 5c, and 7b.

The existing and future timber volumes would be forgone. There would be no timber harvest.

No livestock grazing occurs within the area.

A wilderness prescription would affect the future minerals management program on the area. Mineral leases would not be reissued and existing leases would be allowed to expire unless developed prior to expiration. The value of potential oil and gas production would be forgone.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Wildlife habitat would not be significantly affected under a wilderness prescription for this area since livestock grazing does not occur. Any possibility of future harassment of wildlife would be eliminated, although hunting would still be allowed. Wildlife habitat would change primarily through natural ecological succession.

Nonpriced values would be affected as follows:

- Wildlife habitat would be maintained at or slightly above the current level.
- Deer and bighorn sheep winter range would be maintained at the current level.
- Water quality would be maintained at current level.
- Soil and air would be maintained at current high quality level.

- Visual quality would continue as a natural landscape.
- Dispersed recreation would be maintained at the current level.
- No wilderness attributes will be forgone with this prescription.
- Acres would be added to the National Wilderness System.

The local economy has a strong reliance on recreation and tourism. The on-site use of this area, with the exception of minerals, is very minor in the total economic spectrum. People come to view the area, the scenery, and the big game on winter ranges, but seldom ever actually set foot upon the areas except during hunting season. There are no local economies or businesses dependent upon commodities from the area. The maintenance of visual qualities has perhaps a greater value than any commodity removed from the area.

Any oil and gas discovery or hardrock mining activity could have significant effects on the local and area economy.

2. Designation: Nonwilderness Management Prescription: Minimum Level

This prescription is applied to 17-22 percent of the area in Alternatives 2, 5b, 6, 6a, 6b, 8, 9, and 10 (the Proposed Action). Custodial management would be the theme of this management prescription. The area would remain roadless and undeveloped subject to existing oil and gas leases. There would be no timber harvested or new mineral leases issued. Recreation would be allowed to occur, but no new uses would be developed. Wildlife habitat would be left to occur naturally.

No timber would be harvested.

Domestic livestock grazing does not occur on the area.

Existing oil and gas leases would be honored but no new leases would be issued. If these leases expired without development they would not be reissued. Recreation use would be allowed to continue, but without management emphasis. No new opportunities would be developed. Trails, where they exist, would be maintained only to protect resource damage from erosion. There would be no tree removal or maintenance for user convenience.

Nonpriced values would be affected as follows:

- Wildlife habitat would remain at or near current levels.
- Water quality would remain at or near current levels.
- Soil and air quality would remain at or near current levels.
- Dispersed recreation would remain at or near current levels.
- No wilderness attributes will be forgone with this prescription.
- No acres would be added to the National Wilderness System.

There would be no noticeable social or economic effects from this prescription, unless some type of mineral activity developed. If it developed, this activity would have a very significant effect on the social aspects and economics of the local area.

3. Designation: Nonwilderness
Management Prescription: Recreation/
Wildlife/Roadless

The acres allocated under this prescription would remain essentially roadless and be dedicated to dispersed recreation uses and wildlife habitat. Trails will be maintained to encourage recreation use, and new trails could be constructed. Public

access to the area will be sought if needed to access the area. Limited post, pole and fuelwood harvest could occur on the perimeter of the area if it does not involve road construction with machinery. This would enhance wildlife habitat or recreation resources. Prescribed fire could be used to manage wildlife habitat.

Portions of the area are allocated to this prescription in all alternatives except in Alternatives 1, 4, 5a, 5c, 7b, and 8. The alternatives that use this prescription allocate from 78 percent to 100 percent of the area. In Alternative 10 (the Proposed Action), 1,563 acres are designated to this management prescription.

Oil and gas values, if any, could be realized.

There would be no planned timber harvest because of the small volumes involved.

No domestic livestock grazing is now permitted on the area.

Nonpriced values would be affected as follows:

- Wildlife habitat would slightly increase.
- Deer and bighorn sheep winter range would slightly increase.
- Water quality would be maintained at current level.
- Soil and air quality would be maintained at current high quality level.
- Visual quality would continue as a natural landscape.
- Dispersed recreation would be maintained the current level.
- No wilderness attributes will be forgone with this prescription.

There are no significant social or economic effects, but perhaps an increase in values, if wildlife habitat and game populations increase.

ASH COULEE L1DBD

GROSS ACRES — 14,080

NET ACRES — 13,040

I. INTRODUCTION AND DESCRIPTION

The Ash Coulee Area is located approximately 45 miles west of Dickinson, North Dakota. Access is via Interstate 94 and State Highway 85, and then by County and Forest Service System roads.

The Ash Coulee roadless area is located within the Little Missouri Badlands which is part of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of upland grasslands are interspersed between upland breaks, particularly between Franks Creek and Ash Coulee. The secondary stream channel adjacent to Ash Coulee is relatively level and is a natural transportation corridor. Elevation varies from 2,240 feet to 2,780 feet above sea level.

The rough broken terrain within the area has limited plant growth. On some of the non-grass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt brush and greasewood. Many of the gulches and steep drainages on the north-facing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama with little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffalo berry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others.

The alluvial floodplains along Ash Coulee Creek support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive stands of wheatgrass.

The Ash Coulee area supports viable populations of mule deer, white-tailed deer, antelope, turkeys, and sharptail grouse. Although the wildlife habitats and species represented within the Ash Coulee Area are not unique within the Little Missouri National Grasslands, they are considered important to the State of North Dakota.

The Ash Coulee area is located five miles north of the Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota, and the combination of rugged terrain and open space give the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, antelope, and grouse.

Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

There are some intrusions into the roadless area resulting from wildcat oil exploration. At present, there are two producing wells from which offset drilling could occur. A two-lane high standard road runs east and west across the middle of this area. This road provides access to an oil well in section 8 and to a private oil well in section 15 (T142N R101W).

Livestock developments such as developed springs, fences, water wells, primitive trails, stock tanks, and dugouts (earthen dams) detract from the natural setting, although most range improvements have been constructed to blend with the natural landscape.

b. Natural Appearance

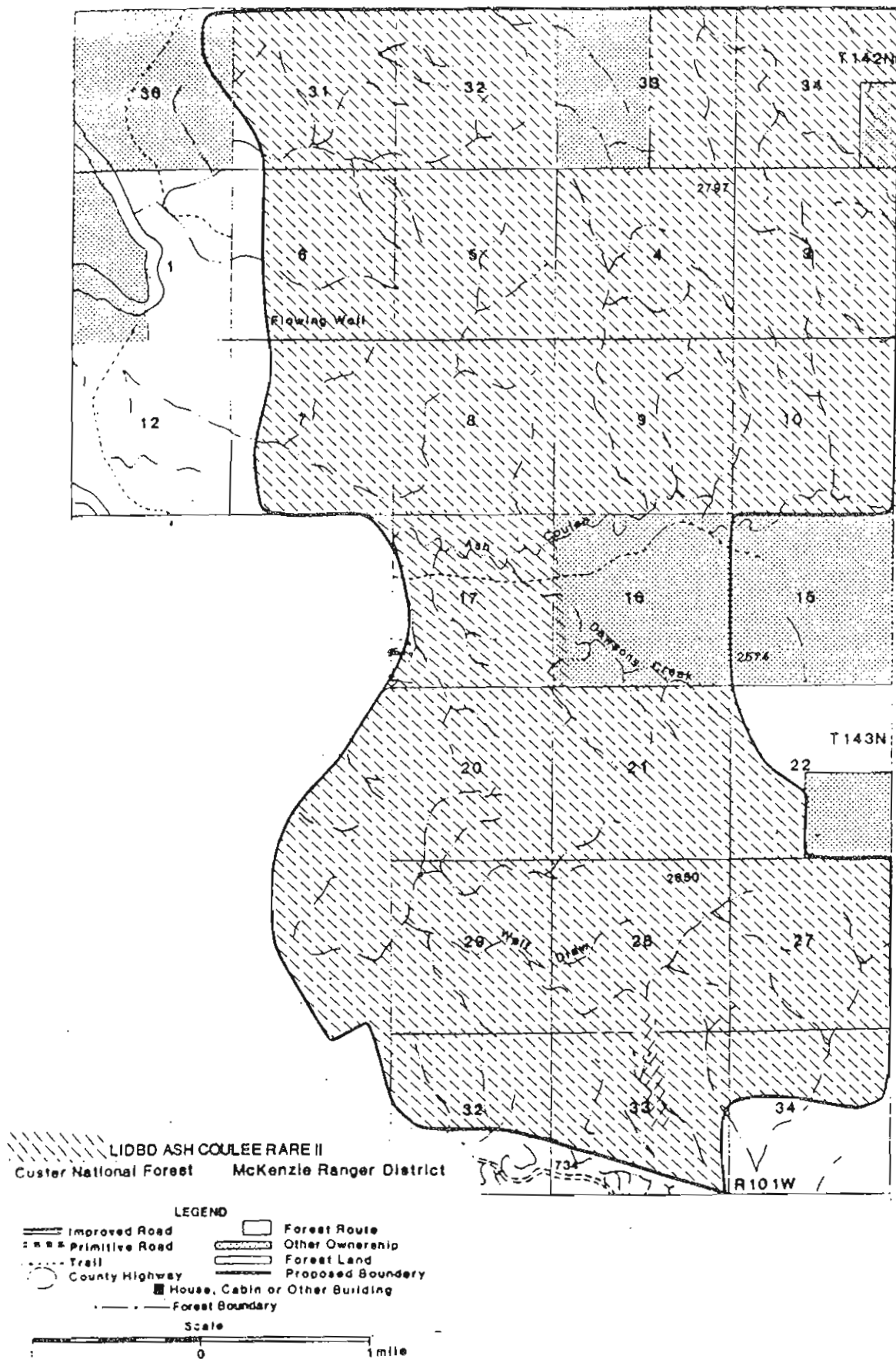
Overall, the roadless area retains a natural appearance representative of the rolling grasslands which are contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact, although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offers opportunities for isolation among the canyons. This is contrasted by the open spaces of the grasslands which offer about 7 miles of cross-country travel in the eastern portion of the area.

d. Primitive Recreation Opportunities

There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially poisonous, are common inhabitants offering the challenge of coexistence. The Ash Coulee area presents the opportunity to view and experience the badlands as they naturally exist. Hiking trails are nonexistent.



e. Other Features

The area contains several archeological sites which represent prehistoric occupations and historical homestead sites. This area contains habitat for the black-footed ferret, an endangered species, since two prairie dog colonies have been identified in the area.

2. Wilderness Manageability and Boundaries

The Ash Coulee roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 34,620 | 28,560 | RARE II Inventory |
| - 20,540 | - 15,520 | Oil and gas development |
| 14,080 | 13,040 | 1983 Roadless Inventory |

The boundaries of the Ash Coulee area are generally well defined, primarily following land survey lines. The section lines are not currently posted, but could be determined from maps. The general recreationist may not be able to define where portions of the Ash Coulee area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (as the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness.

Ash Coulee contains 4,865 acres of outstanding mineral rights (i.e., subsurface rights that are owned by other than the Federal government). The decision to develop the minerals is retained by the subsurface owner. In addition, other portions of the area are leased for oil and gas with two oil wells currently producing.

There are 1,040 acres of private or State lands in the middle and northern portions of the roadless area.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

The Ash Coulee area contains significant amounts of habitat for mule deer, and antelope. The area provides approximately 9,466 acres of summer habitat and 4,734 acres of winter habitat for mule deer and 4,772 acres of summer habitat and 2,388 acres of winter habitat for antelope. There are two known golden eagle nests located within the area; however, it is probable that more exist since a complete survey has not been conducted. The area supports other raptors such as

the red-tailed hawk, marsh hawk, great horned owl, and American kestrel. Wild turkeys and sharptailed grouse exist throughout the area as well as many non-game species.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

TABLE C-25
ROADLESS AREA RESOURCE SUMMARY
ASH COULEE ROADLESS AREA #L1DBD

Area Description: L1DBD
Gross Acres: 14,080
Net Acres: 13,040

| Description | Units | Value |
|------------------------|-------|--------|
| Recreation | | |
| Primitive | RVD's | 2,161 |
| SPNM | RVD's | 240 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 11,172 |
| Allotments | # of | 6 |
| AUM's | AUM's | 7,467 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 0 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 9,466 |
| Winter Habitat | Acres | 3,574 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 9,466 |
| Winter Habitat | Acres | 3,574 |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 13,040 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 35 |
| Leased Area | Acres | 13,040 |

Forage production for livestock is rated as suitable on 11,172 acres of the area and provides for 7,467 AUM's. There are six livestock range allotments within the roadless area. Range improvements include fences and stockwater developments.

The majority of Ash Coulee Area is currently leased for oil and gas and is rated very high in potential for development of these resources. In addition, there are 4,865 acres of outstanding mineral rights (private minerals located under federal surface ownership) in the area. The 4,865 acres of outstanding minerals rights have been leased by the owner and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing well were drilled on State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area is rated moderate for potential coal development and low for hardrock potential.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by this Plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted. At present, there are two producing oil wells within the roadless area. Development may continue by offset drilling on adjoining production units on the same or adjoining leases within the area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or nonproductive wells.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer and antelope. It is estimated that the area produces 2,401 recreational visitor days with a capacity for 3,260 RVD's. Other recreational use of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The terraces associated with the major drainages are supporting communities of the noxious weed, leafy spurge.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a 2-hour drive from population centers in Montana, North Dakota, and South Dakota. This area is approximately 300 highway miles from Billings, Montana.

The following chart displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

| Population Centers | Less Than 50 Miles | | 51-100 Miles | | 101-200 Miles | | 201-300 Miles | |
|--------------------|--------------------|-------|--------------|-------|---------------|--------|---------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SO | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

* Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is the Theodore Roosevelt Wilderness (National Park Service, Dept. of Interior) located approximately six miles south of the roadless area.

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Ash Coulee area, have been designated.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on their interest in the area. Of the 57 responses received, 4 responses referred to the Ash Coulee Area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not favor retaining the area as roadless. Through the development of the Badlands Land Management Plan, most local people expressed opposition to a formal wilderness classification for the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Locallon | Acres | Proximity to Roadless Areas | | |
|-----------------------------|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(areas) | Ashland
(areas) | Grasslands
(areas) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |

Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest

| | Beartooth | Ashland | Grasslands |
|---------------------------------|-----------|---------|------------|
| Wilderness Within 100 Miles | | | |
| No. of Areas | 4 | 0 | 0 |
| No. of Acres | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | |
| No. of Areas | 3 | 5 | 1 |
| No. of Acres | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | |
| No. of Areas | 11 | 2 | 0 |
| No. of Acres | 5482381 | 584300 | 0 |

North Dakota be recommended for wilderness. The final RARE II allocation was for nonwilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Ash Coulee Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from

regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-26 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Ash Coulee is allocated totally to wilderness in Alternatives 4, 5a, and 7b.

Wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to non-use. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Wildlife habitat would not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the primary competition for forage. Harassment of wildlife would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change only through natural ecological succession.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

Since the entire roadless area is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development continues. Since production has been established within the area, it could continue until the limits of the reserves are established by dry or nonproducing holes. Outstanding or reserved mineral rights (private minerals under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. Decisions to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

TABLE C-26
MANAGEMENT EMPHASIS BY ALTERNATIVE
ASH COULEE ROADLESS AREA L1DBD

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | | |
|----------------------------------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|
| | Alternative | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 | 9 PA 10 |
| Wilderness | | | | 13040 | | 13040 | | | | | | | | 13040 | | |
| Minerals | | 1220 | | | 6664 | | 8144 | 1222 | | | | 175 | 1224 | | 1224 | |
| Wildlife | 2244 | 400 | 3895 | | 3894 | | | 2674 | 1625 | 3895 | 3894 | 400 | 400 | | | 1625 1625 |
| Range | | 2240 | 2235 | | 2235 | | | 2234 | 1010 | 2235 | 2235 | 3284 | 2235 | | | 1010 1010 |
| Range/Wildlife/Minerals | | 9180 | 6910 | | 247 | | 4896 | 6910 | 10405 | 6910 | 6911 | 9180 | 9181 | | 11816 | 10405 10405 |
| Range/Wildlife/Minerals/Roadless | 10798 | | | | | | | | | | | | | | | |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | | |
| Roaded | | | | | | | | | | | | | | | | |
| Decade 1 | 2244 | 13040 | 13040 | | 13040 | | 13040 | 13040 | 13040 | 13040 | 13040 | 13040 | 13040 | | 13040 | 13040 13040 |
| Decade 5 | 2244 | 13040 | 13040 | | 13040 | | 13040 | 13040 | 13040 | 13040 | 13040 | 13040 | 13040 | | 13040 | 13040 13040 |
| Roadless | | | | | | | | | | | | | | | | |
| Decade 1 | 10796 | | | | | | | | | | | | | | | |
| Decade 5 | 10796 | | | | | | | | | | | | | | | |
| Wilderness | | | | 13040 | | 13040 | | | | | | | | 13040 | | |

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would increase, and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Ash Coulee would increase.
- Soil, air and water qualities would improve from the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Ash Coulee is very high and the loss of these revenues could be high, both from leasing and future production.

Social effects would be minimal since other resource values would be protected and activities such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness Management Prescription: Range/ Wildlife/Minerals

Ash Coulee is partially allocated to this prescription in every alternative except 1, 4, 5a, and 7b. Acres by alternative vary from 247 acres (2 percent) under Alternative 5 to 11,816 acres (91 percent) under Alternative 8. In Alternative 10 (the Proposed Action) 10,405 acres (80 percent) is designated to this management prescription. Average acreage in all the alternatives is approximately 56 percent. This level of management protects and maintains resource values as defined by laws and administrative policies while emphasizing the outputs of livestock grazing, wildlife objectives, and minerals. The high market alternatives (7 and 7a) emphasize the production of livestock grazing and minerals production.

No suitable timber exists in Ash Coulee. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain or increase AUM production near current levels while implementing intensive grazing systems in order to improve livestock distribution. Although an intensive range improvements program would not preclude a future wilderness designation, it would have some effect on the wilderness attributes of the area. In the high market alternatives (7, and 7a), emphasizing range management goals may have some adverse effects on wildlife habitat. Overall, range management goals should complement wildlife habitat objectives, especially in critical areas such as hardwood draws.

Wildlife habitat should be improved or maintained as range management practices are implemented. Improved hardwood draws and ground

cover will benefit big game as well as upland game birds due to improved cover and nesting sites. In general, wildlife management activities would not impact or preclude a wilderness designation for the area. Emphasizing wildlife habitat goals in some areas may have some adverse effects on livestock grazing.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values. However, some adverse impacts to livestock grazing and wildlife habitat will occur as the area is developed. The construction of roads, well pads and pipelines would preclude a wilderness designation in the future.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease.

Economic effects would be minor since most activities occur in the vicinity of the area. Intensive range management would require more investments on the part of the livestock producers and the Forest Service; however, livestock production would be at current levels or increased. The maintenance and construction of range improvements would be facilitated by motorized access.

Nonpriced values would be affected as follows:

- Visual quality would be decreased as the area became more developed.
- Security for big game, upland game birds and raptors would decrease.
- Soil, air, and water qualities would decrease as development expanded throughout the area.
- Recreational opportunity setting would change from semi-primitive non-motorized to roaded natural.
- Semi-primitive and wilderness opportunities would be forgone in 10-15 years.

3. Designation: Nonwilderness Management Prescription: Range/ Wildlife/Minerals/Roadless

Ash Coulee is partially allocated to this prescription in Alternative 1 (10,796 acres).

This management prescription would essentially maintain the current management strategy for this area. The range, wildlife, and roadless values would remain the most important considerations.

No suitable timber exists in Ash Coulee.

Range management goals would be to maintain AUM production at or near current levels while implementing some type of intensive management system on the allotments in the area. Implementing intensive range management sys-

tems would necessitate some additional range improvements such as fences, and water developments. This could impact some of the roadless attributes of the area somewhat but would not preclude a wilderness designation at some later point in time.

Wildlife goals would be to maintain or improve the habitat for deer, antelope, and grouse. This would impact the range management goals to a degree in that forage needs of wildlife must be recognized.

This prescription would significantly affect the mineral management program. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little or no effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. This type of dispersed recreational use would have no effect on the wilderness resource or other resource values.

The economic and social effects would be somewhat significant. More intensive range management would be more costly to the livestock producers. Motorized equipment could be used to construct and maintain range improvements as long as roads were not constructed.

The loss of potential oil and gas revenues from leasing and production due to no surface occupancy stipulations could represent a significant economic loss.

Nonpriced values would be affected as follows:

- Impacts to the landscape would increase slightly with the addition of more range improvements.
- Security for big game would be maintained.
- There would be no additional acres added to the National Wilderness System.
- The recreational setting opportunity would remain as semi-primitive non-motorized.
- Semi-primitive and wilderness opportunities would be maintained.

4. Designation: Nonwilderness
Management Prescription: Minerals

Ash Coulee is partially allocated to this prescription under Alternatives 2 (1220 acres), 5 (6664 acres), 5b (8144 acres), 5c (1222 acres), 7 (175 acres), 7a, and 8 (1224 acres). This level of management maximizes mineral outputs in preference to other resource outputs but within legal

requirements and administrative policies. It is recognized that a loss of other resource values may occur.

Minor, short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Ash Coulee area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher. This prescription would also result in the development of the area allocated to this emphasis. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of that portion of the area as wilderness. Disturbance of wildlife from human activities and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, powerlines, etc., would be constructed where needed in order to expedite production. Some minor impacts to livestock grazing could be expected due to the reduction in the forage base.

All minerals activities within the designated acreage would have priority over other resources. Mineral production would not be dependent on mitigation of other resources, and leases in these areas would contain minimal stipulations. Common variety minerals such as scoria and gravel would be inventoried and made available for commercial sale.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would decrease.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Harassment of wildlife would increase as additional roads are constructed; the quality of hunting and other primitive recreation opportunities would decrease greatly.
- Wilderness characteristics would be forgone in and surrounding developed areas.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments.

Social effects would center mainly on local ranchers due to less suitable acreage for grazing, and possibly some reductions and/or changes in the size and type of operation.

5. Designation: Nonwilderness
Management Prescription: Wildlife

Ash Coulee is partially allocated to this prescription under all the alternatives except 4, 5a, 5b, 7b, and 8. Acres by alternative vary from 400 acres under Alternatives 2, 7, 7a and 7b to 3,895 acres (30 percent) under Alternatives 3, 4, 5, 6a and 6b. Average acreage for all alternatives is approximately 17 percent. This level of management emphasizes wildlife.

Livestock grazing would continue but the management practices associated with this resource would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not necessarily to increase livestock numbers. Critical areas such as hardwood draws would be managed to optimize wildlife habitat values. Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted. Leases would contain no surface occupancy stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (calving and fawning areas, grouse dancing grounds, etc.). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off years. Roads would be managed as necessary to protect wildlife values (i.e., road closures, limited access, etc.).

The economic effects of this alternative would be significant. Livestock grazing would be reduced substantially to accomplish wildlife objectives in the area. Oil and gas development will have numerous restrictions placed on it in wildlife areas but these are not expected to significantly increase the cost of exploration. Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

Nonpriced values would be affected as follows:

- Visual quality of the area would remain essentially unchanged.
- Harassment of wildlife would be reduced due to restrictions on development of the area.
- Soil, air, and water qualities would, in general, remain unchanged.
- The quality of hunting and primitive recreational activities would remain high.
- Although no additional acres would be added to the National Wilderness System, wilderness characteristics would be retained.
- Opportunities for primitive recreation and solitude would exist much as they are presently.

6. Designation: Nonwilderness Management Prescription: Range

Ash Coulee is partially allocated to this prescription under all alternatives except 1, 4, 5a, 5b, 7b, and 8. Acres by alternative vary from 1010 (8 percent) in Alternatives 6, 9, and 10 (Proposed Action) to 3285 acres (25 percent) in Alternative 7. Average acreage for all alternatives is approximately 16 percent. This level of management would optimize livestock outputs in preference to other resource outputs, except to meet legal and administrative policies.

Intensive range management systems would be emphasized, including the use of structural and non-structural improvements. All available forage would be allocated to livestock in these areas and AUM's would be increased accordingly. If necessary, roads and trails would be built to implement more intensive livestock management systems. This would significantly impact the wilderness attributes of the area and would probably preclude at least portions of the area from possible future classification as wilderness.

The quality and quantity of wildlife habitat would be reduced in areas managed under this prescription. Conflicts between wildlife and livestock would be settled in favor of wildlife only when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would decrease. The ranching community would benefit from increased production and profits, but not significantly. The costs of oil exploration would increase slightly in certain situations.

Nonpriced values would be affected as follows:

- Visual quality will degrade in these areas and the acres of EVC-4 (disturbed) will increase.
- The quality of primitive recreational activities including hunting will decrease.
- Security of big game and upland game birds would decrease.
- Wilderness characteristics would decline under this prescription and may be irrevocably lost. The greatest impact on wilderness would be the structural range improvements.

BELL LAKE L1DAK

GROSS ACRES — 13,580

NET ACRES — 12,460

I. INTRODUCTION AND DESCRIPTION

The Bell Lake Area is located approximately 40 miles west of Dickinson, North Dakota. Access is via Interstate 94, and then by county and Forest Service System roads.

The Bell Lake roadless area is located within the Little Missouri Badlands, a biogeographical sub-unit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of upland grasslands are interspersed between upland breaks, particularly in the north and west side of the unit. Elevation varies from 2,300 feet to 2,700 feet above sea level.

The rough broken terrain within the area has limited plant growth. On some of the nongrass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt bush, and greasewood. Many of the gulches and steep drainages on northfacing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama with little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffaloberry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others.

The alluvial floodplains along Bell Lake Creek support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive wheatgrass stands.

The Bell Lake area supports viable populations of mule deer, white-tailed deer, antelope, and sharp-tail grouse. Although the wildlife habitats and species represented within the Bell Lake Area are not unique within the Little Missouri National Grasslands, they are considered important to the State of North Dakota.

The Bell Lake area is located 11 miles northwest of the Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, antelope and grouse. Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

There are some intrusions into the roadless area resulting from wildcat oil exploration. At present, there are two producing wells from which offset drilling could occur. There is approximately 1 mile of Forest Service road within the area providing access to the producing wells.

Livestock developments (i.e., developed springs, fences, water wells, primitive trails, stock tanks, dugouts) detract from the natural setting, although most range improvements have been constructed to blend with the natural surroundings.

b. Natural Appearance

Overall, the roadless area retains a natural appearance representative of the rolling grasslands which are contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact, although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offer opportunity for isolation among the canyons. This is contrasted by the open spaces of the grasslands.

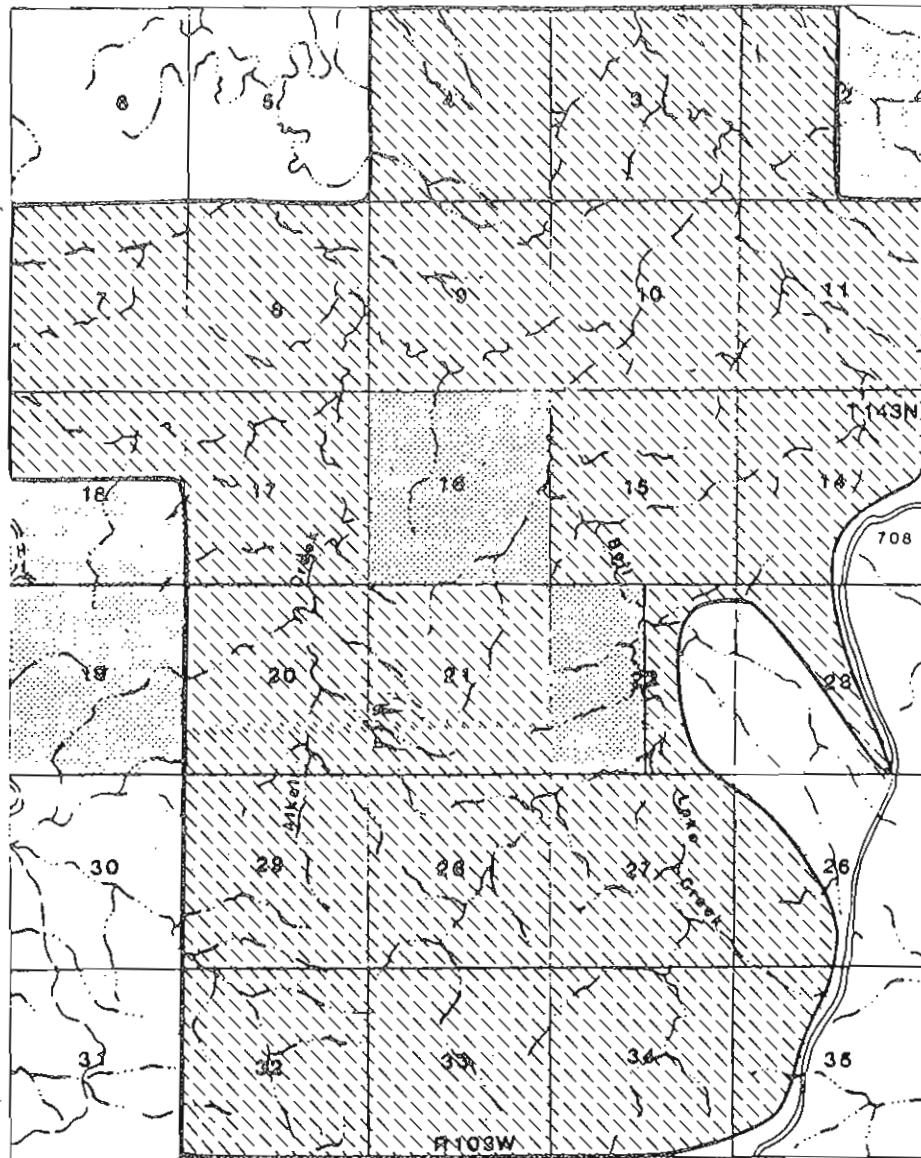
d. Primitive Recreation Opportunities

There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer day-time temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially dangerous, are common inhabitants offering the challenge of coexistence. Hiking trails are nonexistent.

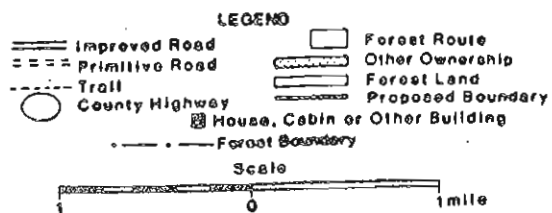
e. Other Features

The area contains several archeological sites which represent prehistoric occupations and historical homestead sites.

This area contains habitat for the black-footed ferret, an endangered species, since two prairie dog colonies have been identified in the area.



LIDAK BELL LAKE RARE II
Custer National Forest McKenzie Ranger District



The Bell Lake area presents the opportunity to view and experience the badlands as they naturally exist.

2. Wilderness Manageability and Boundaries

The Bell Lake roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 11,980 | 10,860 | RARE II Inventory |
| + 1,600 | + 1,600 | Readjustment |
| 13,580 | 12,460 | 1983 Roadless Inventory |

The boundaries of the Bell Lake area are generally well defined. The north, west, and south boundaries are defined by section lines, while the east boundary is delineated by Forest Road No. 708. The section lines are not currently posted, but could be determined from GLO surveys. The general recreationist may not be able to define where portions of the Bell Lake area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (as the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness.

Bell Lake contains 365 acres of outstanding mineral rights (i.e., subsurface rights are owned by other than the Federal government). The decision to develop the minerals is retained by the subsurface owner. In addition, other portions of the area are leased for oil and gas with two oil wells currently producing.

There are 1,120 acres of private or State lands within the unit.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

The Bell Lake area contains significant amounts of habitat for mule deer and antelope. The area provides approximately 6,573 acres of summer habitat and 3,133 acres of winter habitat for mule deer, and 1,432 acres of summer habitat and 1,322 acres of winter habitat for antelope. There are no known golden eagle nests located within the area; however, it is probable that some exist since a complete survey has not been conducted. The area supports other raptors such as the red-tailed hawk, marsh hawk, great horned owl, and American kestrel. Wild turkeys and sharptailed grouse exist throughout the area as well as many non-game species.

TABLE C-27
ROADLESS AREA RESOURCE SUMMARY
BELL LAKE ROADLESS AREA #L1DAK

Area Description: L1DAK
Gross Acres: 13,580
Net Acres: 12,460

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 906 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 9,860 |
| Allotments | # of | 1 |
| AUM's | AUM's | 4,973 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 0 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 8,005 |
| Winter Habitat | Acres | 4,455 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 6,573 |
| Winter Habitat | Acres | 3,133 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 1,432 |
| Winter Habitat | Acres | 1,322 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | Unknown |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 12,460 |

| Description | Units | Value |
|-----------------------|-------|--------|
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 12,460 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 11 |
| Leased Area | Acres | 12,460 |

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 9,860 acres of the area and provides for 4,973 AUM's. There is one livestock range allotment within the roadless area. Range improvements include fences and stockwater developments.

The majority of the Bell Lake area is currently leased for oil and gas and is rated very high in potential for development of these resources. In addition, there are 365 acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the Plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted.

At present, there are two producing oil wells within the roadless area. Development may continue by offset drilling on adjoining production units on the same or adjoining leases within the area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or nonproductive wells.

The 365 acres of outstanding minerals rights have been leased by the owner and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing well were drilled on State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area has high coal reserves and is rated moderate for potential coal development. The potential for hardrock, other than common varieties, is rated low.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer, and antelope. It is estimated that the area produces 906 recreational visitor days with a capac-

ity for 2,492. Other recreational use of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The terraces associated with the major drainages are supporting communities of the noxious weed leafy spurge.

D. Need

1. Proximity to Population Centers and Designated Wilderness Areas

The area is more than a two-hour drive from population centers in Montana and South Dakota. It is approximately 175 miles west of Bismark, North Dakota, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

| Population Centers | Less Than 50 Miles | | 51-100 Miles | | 101-200 Miles | | 201-300 Miles | |
|--------------------|--------------------|-------|--------------|-------|---------------|--------|---------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is that portion of the Theodore Roosevelt National Park (National Park Service, USD) classified as wilderness located approximately 11 miles southeast of the planning area.

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Bell Lake area, have been designated.

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|---|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(acres) | Ashland
(acres) | Grasslands
(acres) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |
| Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest | | | | | |
| | | | Beartooth | Ashland | Grasslands |
| Wilderness Within 100 Miles | | | | | |
| | No. of Areas | 4 | 0 | 0 | 0 |
| | No. of Acres | 897200 | 0 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | | | |
| | No. of Areas | 3 | 5 | 1 | |
| | No. of Acres | 742200 | 2525900 | 10700 | |
| Wilderness Within 201-300 Miles | | | | | |
| | No. of Areas | 11 | 2 | 0 | 0 |
| | No. of Acres | 5482381 | 584300 | 0 | 0 |

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 7 responses referred to the Bell Lake area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless. Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of

the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Bell Lake Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who

commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-28 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Bell Lake is allocated to wilderness in Alternatives 4 and 7b (12,460 acres).

The wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to nonuse. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Depending on future mineral activity, wildlife habitat would otherwise probably not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the primary competition for forage. Disturbance of wildlife due to human activity would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change through natural ecological succession as affected by livestock grazing.

Domestic livestock grazing would be allowed to continue but some of the management practices

TABLE C-28
MANAGEMENT EMPHASIS BY ALTERNATIVE
BELL LAKE ROADLESS AREA L1DAK

| Management
Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | | | |
|---------------------------------------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 | 9 | PA 10 |
| Wilderness | | | | 12460 | | | | | | | | | | 12460 | | | |
| Minimum Level
(Roadless Mgmt.) | | | | | | | | | | | | | | | 883 | | |
| Wildlife | 872 | 593 | 1074 | | 1072 | 1041 | 810 | 1072 | 595 | 1074 | 1072 | 595 | 595 | | 595 | 595 | 595 |
| Minerals | | 408 | 406 | | 1574 | 406 | 406 | 1574 | 406 | 406 | 406 | | | | | 406 | 406 |
| Range | | 479 | | | | | | | | | | 406 | 883 | | | | |
| Range/Wildlife/
Minerals | | 10980 | 10980 | | 9814 | 11013 | 10981 | 9814 | 11459 | 10980 | 10982 | 10982 | 10982 | | 10982 | 11459 | 11459 |
| Range/Wildlife/
Minerals, Roadless | 11588 | | | | | | 263 | | | | | 477 | | | | | |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | | | |
| Roaded | | | | | | | | | | | | | | | | | |
| Decade 1 | 872 | 12460 | 12460 | | 12460 | 12460 | 12197 | 12460 | 12460 | 12460 | 12460 | 11983 | 12460 | | 11577 | 12460 | 12460 |
| Decade 5 | 872 | 12460 | 12460 | | 12460 | 12460 | 12197 | 12460 | 12460 | 12460 | 12460 | 11983 | 12460 | | 11577 | 12460 | 12460 |
| Roadless | | | | | | | | | | | | | | | | | |
| Decade 1 | 11588 | | | | | | 263 | | | | | 477 | | | 883 | | |
| Decade 5 | 11588 | | | | | | 263 | | | | | 477 | | | 883 | | |
| Wilderness | | | | 12460 | | | | | | | | | | 12460 | | | |

associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

Since the entire roadless area is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development continue. Since production has been established within the area, it could continue until the limits of the reserves are established by dry or nonproducing holes. Outstanding or reserved mineral rights (private minerals under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management. Under this wilderness prescription, the area would be withdrawn from mineral entry after expiration of the existing leases if production is not established.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would increase, and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Bell Lake would increase.
- Soil, air and water qualities would improve from the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Bell Lake is very high and the loss of these revenues could be high, both from leasing and future production. A wilderness prescription would also increase the costs of range management, specifically, maintenance of range improvements, since motorized vehicles and equipment would be limited.

Social effects would be minimal since other resource values would be protected and activities

such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness
Management Prescription: Minimum Level

Alternative 8 allocates 883 acres to this prescription or approximately 7 percent of the total area. None of the other alternatives utilize this prescription. The impacts and consequences in regards to wilderness or other resources is inconsequential. Some minor adjustments in boundaries of the area could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

3. Designation: Nonwilderness
Management Prescription: Range/
Wildlife/Minerals

Bell Lake is partially allocated to this prescription in every alternative except 1, 4, and 7b. Acreages in Bell Lake allocated to this prescription vary from 9,814 acres (79 percent) in Alternative 5c to 11,459 acres (92 percent) in Alternatives 6 and 10 (the Proposed Action). The average acreage in all the alternatives is approximately 85 percent.

The theme of this management prescription would be to maintain existing wildlife habitat values while also managing for the commodity products of livestock grazing and minerals production.

Under this management prescription, the wilderness and roadless character of a major part of the area would be irretrievably forgone.

No suitable timber exists in the Bell Lake Roadless Area. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production at or slightly above current levels while implementing intensive grazing systems in order to improve livestock distribution and overall forage utilization. Although an intensive range improvement program would not preclude a future wilderness designation, it would have some effects on the wilderness attributes of the area. In some alternatives, range management goals may have some adverse effects on wildlife habitat. Overall, range management goals would complement wildlife habitat objectives, especially in critical areas such as hardwood draws.

Wildlife habitat should be improved or maintained as range management practices are implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites. In general, wildlife management activities would not impact or preclude a wilderness designation for the area. Providing for wildlife habitat goals in some areas may have some adverse effects on livestock grazing.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values. However, some adverse impacts to livestock grazing and wildlife habitat will occur as the area is developed. The construction of roads, well pads, and pipelines would preclude a wilderness designation in the future.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease.

Nonpriced values would be affected as follows:

- Visual quality would be decreased as the area became more developed.
- Security for big game, upland game birds, and raptors would be decreased.
- Soil, air, and water qualities would decrease as development expanded in the area.
- The recreational opportunity setting would change from semi-primitive, non-motorized to roaded natural appearing.
- Semi-primitive and wilderness opportunities would be forgone in 10-15 years.

Economic effects would be minor since most activities occur in the vicinity of the areas. Intensive range management would require more investment on the part of the livestock producers and the Forest Service; however, livestock production would be at or above current levels. The anticipated increase in minerals production would benefit local economies as well as add to the National income.

4. Designation: Nonwilderness Management Prescription: Range/Wildlife/Minerals/Roadless

Portions of the Bell Lake area are allocated to this prescription in Alternatives 1 (11,588 acres), 5b (263 acres), and 7 (477 acres).

This management prescription would essentially maintain the current management strategy for this portion of the roadless area. The range, wildlife, roadless and mineral values would remain the most important considerations.

No suitable timber exists in Bell Lake. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution and to provide for improving certain wildlife habitats. Implementing intensive range management systems would necessitate some additional range improvements such as fences and water developments. This would impact the wilderness attributes of the area

somewhat but would not preclude a wilderness designation at some later point in time.

Wildlife goals would be to maintain or improve the habitat for deer, antelope, and upland game birds. This would impact the range management goals in that forage needs for wildlife must be met. Wildlife management needs and goals will have no effects on wilderness/roadless attributes of the area.

This prescription could significantly affect the mineral management program for the area. Wildcat oil and gas development would not be allowed. However, oil and gas development could occur on outstanding mineral rights or by offset drilling from two producing wells within the unit. Minerals management under this prescription would have little effect on the wilderness resource or other resource values, since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new exploratory drilling would be allowed on Federal minerals. This type of dispersed recreational use would have no effect on the wilderness resource or other resource values.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained.
- Security for big game, upland game and nongame wildlife would remain the same. Soil, air and water quality would improve due to improved range management practices.
- Although no acres would be added to the National Wilderness System, the basic wilderness attributes of the area would remain intact unless development occurred on outstanding mineral rights.
- The recreational opportunity setting would remain as semi-primitive non-motorized.

The most significant economic effect would be the loss of potential revenues from oil and gas reserves.

5. Designation: Nonwilderness Management Prescription: Minerals

Bell Lake is partially allocated to this prescription under Alternatives 2 (408 acres), 3 (406 acres), 5 (1,574 acres), 5a (406 acres), 5b (406 acres), 5c (1,574 acres), 6 (406 acres), 6a (406 acres), 6b (406 acres), 9 (406 acres), and 10 (the Proposed Action) (406 acres).

This management prescription would emphasize the production of commodity products, namely minerals (oil and gas). It is recognized that a loss of other resource outputs may occur.

Minor, short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Bell Lake area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher.

Disturbance of wildlife due to human activities and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, powerlines, etc., would be constructed where needed in order to expedite production.

All minerals activities within the designated acreage would have priority over other resources. Mineral production would not be dependent on mitigation of other resources, and leases in these areas would contain minimal stipulations. Common variety minerals such as scoria and gravel would be inventoried and made available for commercial sale. This would result in the development and roading of the area allocated to this management strategy. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of that portion of the area as wilderness.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would be degraded in these areas.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Harassment of wildlife would increase as additional roads are constructed.
- The quality of hunting and other primitive recreation opportunities would decrease greatly.
- The recreation opportunity setting would change from semi-primitive, non-motorized to roaded natural appearing.
- The wilderness attributes would be irretrievably lost on that portion of the area.
- No acres would be added to the National Wilderness System.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments. Social effects would center mainly on local ranchers due to less suitable acreage for grazing, less AUM's, and reductions and/or changes in the size of their operations.

6. Designation: Nonwilderness Management Prescription: Wildlife

Bell Lake is partially allocated to this prescription under all alternatives except 4 and 7b. Acreages vary from 593 (5 percent) under Alternative 2 to 1,074 acres (10 percent) under Alternatives 3 and 6a. Average acreage in the alternatives is approximately 8 percent.

This management prescription would emphasize the enhancement of the wildlife habitat and the accomplishment of wildlife related goals on portions of the roadless area.

Livestock grazing would continue but the management practices associated with this resource would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not to increase livestock numbers.

Critical areas such as hardwood draws would be managed to optimize wildlife values. Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife. In some areas livestock numbers would be reduced to meet wildlife management objectives.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted. Leases would contain no surface occupancy stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (i.e., calving and fawning areas, grouse dancing grounds). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off-years. Roads would be managed as necessary to protect wildlife values (i.e., road closures, limited access). This prescription could substantially impact the wilderness attributes on portions of the area. Although stipulations would be applied to mineral leases to protect wildlife habitat values, surface occupancy would be allowed. Roads and well pads would impact the wilderness quality of portions of the area precluding future wilderness classification.

Nonpriced values would be affected as follows:

- Visual quality of the area would decrease slightly.
- Key wildlife habitat areas such as woody draws would be protected.
- Soil, air, and water qualities would improve as range conditions improved.
- The quality of hunting and primitive recreational activities would remain at present levels.
- No acres would be added to the National Wilderness System.
- Wilderness attributes could be forgone on parts of the area.
- Opportunities for primitive recreation and solitude would exist much as they are presently.

The economic effects of this alternative will be slight. Livestock grazing could be reduced but most likely will only be redistributed over the area. Oil and gas development will have numerous re-

strictions placed on it in wildlife areas, but these are not expected to significantly increase the cost of exploration.

Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

7. Designation: Nonwilderness
Management Prescription: Range

Bell Lake is partially allocated to this prescription under Alternatives 2 (479 acres), 7 (406 acres), and 7a (883 acres). This management prescription would optimize the production of livestock grazing.

Intensive range management systems would be emphasized, including the use of structural and non-structural improvements. All available forage would be allocated to livestock except that necessary to maintain viable wildlife populations. Domestic livestock grazing would be increased accordingly.

Wilderness attributes of the area would decline under this prescription but would not be irrevocably lost. The greatest impact on the wilderness character of the area would be the structural range improvements.

The quality and quantity of wildlife habitat would be reduced in areas managed under this prescription. Conflicts between wildlife and livestock would be settled in favor of wildlife only when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Nonpriced values would be affected as follows:

- Visual quality will degrade in these areas and the acres of EVC-4 (disturbed) will increase.
- The quality of primitive recreational activities including hunting will decrease.
- Security of big game and upland game birds would decrease.
- No acres would be added to the National Wilderness System.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would increase. The ranching community would benefit from increased production and profits but not significantly. The costs of oil exploration would increase slightly in certain situations.

BENNETT-COTTONWOOD L1DAY

GROSS ACRES — 15,360

NET ACRES — 13,760

I. INTRODUCTION AND DESCRIPTION

The Bennett-Cottonwood Area is located approximately 50 miles southeast of Williston, North Dakota. Access is via State Highway 85, and then by County and Forest Service System roads.

The Bennett-Cottonwood roadless area is located within the Little Missouri Badlands, a biogeographical subunit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of upland grasslands are interspersed between upland breaks. The area is drained to the northwest via the Bennett-Cottonwood drainages. Elevation varies from 2,000 feet to 2,628 feet above sea level.

The rough broken terrain within the area has limited plant growth. On some of the nongrass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt brush and greasewood. Many of the gulches and steep drainages on northfacing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama with a little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffalo berry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others. The alluvial floodplains along Bennett-Cottonwood Creek support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive wheatgrass stands.

The Bennett-Cottonwood area supports viable populations of mule deer, white-tailed deer, turkeys, and sharptail grouse. The unit also provides suitable bighorn sheep habitat and has been identified by the North Dakota Game and Fish Department as a possible transplant site. Although the wildlife habitats and species represented within the Bennett-Cottonwood area are not unique within the Little Missouri National Grasslands, they are considered important to the State of North Dakota.

The Bennett-Cottonwood area is adjacent to the northern unit of the Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness.

Present recreational use is primarily during hunting season for deer, antelope, and grouse. Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

There are some intrusions into the roadless area resulting from wildcat oil exploration. At present, there are two producing wells from which offset drilling could occur. A two-lane high standard road accesses the producing wells in the south central portion of the unit. A dry hole was drilled in 1981 immediately north of the existing well. The pad and short access road have been reclaimed and are being revegetated to natural conditions.

Livestock developments (i.e., developed springs, fences, water wells, primitive trails, stock tanks, dugouts, etc.) detract from the natural setting, although most range improvements have been constructed to blend with the natural surroundings.

b. Natural Appearance

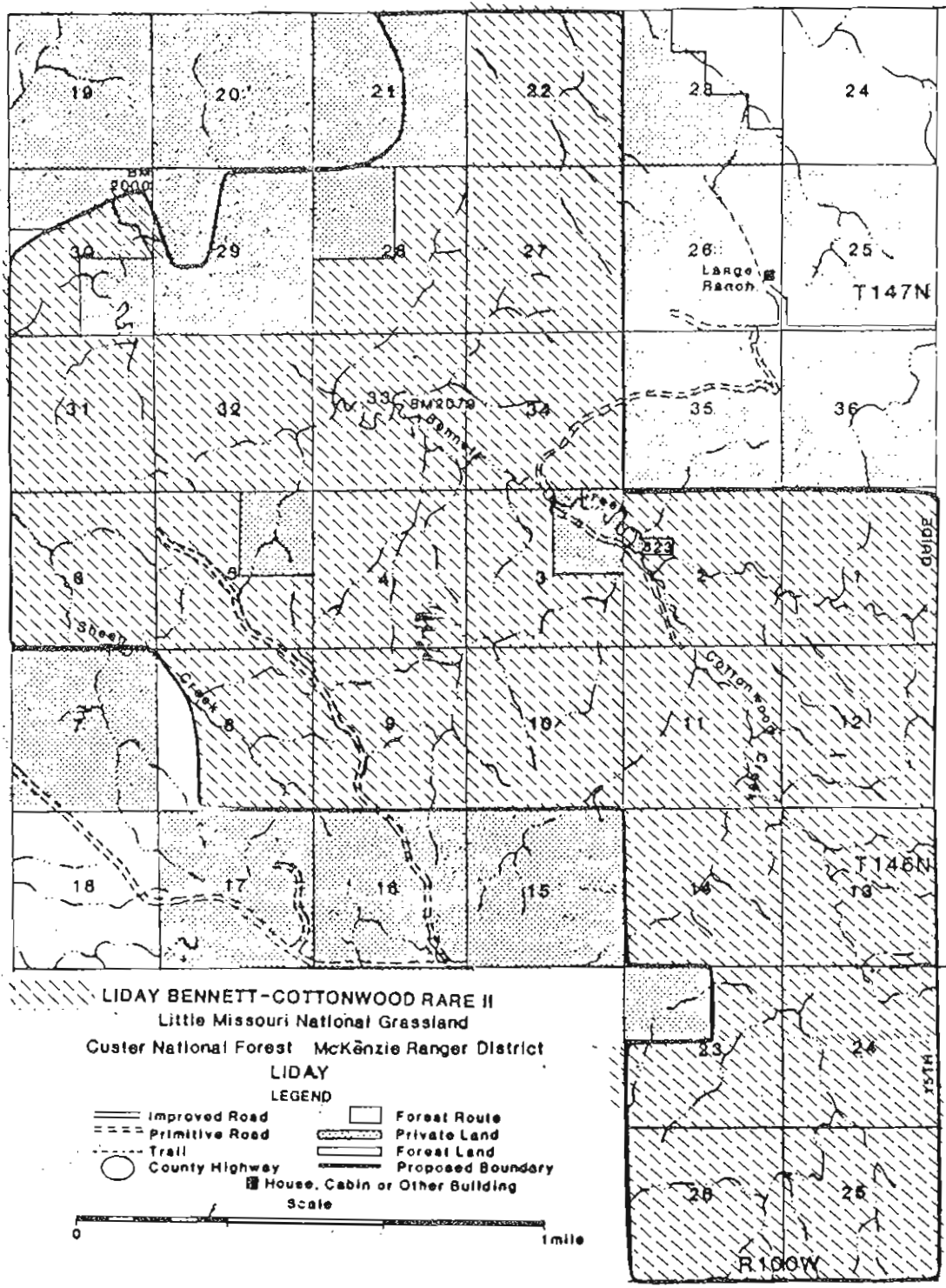
Overall, the roadless area retains a natural appearance representative of the rolling grasslands which is contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact, although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offer opportunity for isolation among the canyons. This is contrasted by the open spaces of the grasslands which offer about 3 miles of cross-country travel in the southwestern portion of the area.

d. Primitive Recreation Opportunities

There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially dangerous, are common inhabitants offering the challenge of coexistence. Hiking trails are nonexistent.



e. Other Features

The area contains several archeological sites which represent prehistoric occupations and historical homestead sites.

Since two prairie dog colonies have been identified, this area contains habitat for the black-footed ferret, an endangered species. The golden eagle is frequently observed within the area.

The Bennett-Cottonwood area presents the opportunity to view and experience the badlands as they naturally exist.

2. Wilderness Manageability and Boundaries

The Bennett-Cottonwood roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 18,400 | 18,240 | RARE II Inventory |
| - 3,040 | - 3,040 | Oil and gas development |
| 15,360 | 15,760 | 1983 Roadless Inventory |

Natural barriers define the boundaries on the southwest and northwest ends of the unit, while the other boundaries are delineated by fences along section lines. The section lines are not currently posted, but could be determined from GLO surveys. The general recreationist may not be able to define where portions of the Bennett-Cottonwood area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (of which the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness.

Bennett-Cottonwood contains 1,867 acres of outstanding mineral rights (i.e., subsurface rights are owned by other than the Federal government). The decisions to develop the minerals is retained by the subsurface owner. In addition, other portions of the area are leased for oil and gas with two oil wells currently producing.

There are 1,600 acres of private lands in the middle and northern portions of the roadless area.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

The Bennett-Cottonwood area contains significant amounts of habitat for mule deer and bighorn sheep. The area provides approximately 9,173 acres of summer habitat and 4,587 acres of

TABLE C-29
ROADLESS AREA RESOURCE SUMMARY
BENNETT-COTTONWOOD ROADLESS AREA

Area Description: L1DAY
Gross Acres: 17,200
Net Acres: 17,040

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 640 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 7,104 |
| Allotments | # of | 6 |
| AUM's | AUM's | 4,501 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 1 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 9,173 |
| Winter Habitat | Acres | 4,587 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 9,173 |
| Winter Habitat | Acres | 4,587 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | Unknown |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 17,040 |

| Description | Units | Value |
|-----------------------|-------|--------|
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 17,040 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 17 |
| Leased Area | Acres | 17,040 |

winter habitat for mule deer, and 1,376 acres of summer habitat and 688 acres of winter habitat for antelope. Although there are not presently any bighorn sheep in the unit, the North Dakota Game and Fish Department has designated this area as a high priority transplant site. No known golden eagle nests have been identified within the unit, although nests occur within similar type drainages 3 miles to the north. Other unique raptors such as prairie falcons, merlins, and ferruginous hawks have been observed in the area. Wild turkeys and sharptailed grouse exist throughout the area as well as many nongame species.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 7,100 acres of the area and provides for 4,500 AUM's. There are three livestock range allotments within the roadless area. Range improvements include fences and stockwater developments.

The majority of the Bennett-Cottonwood area is currently leased for oil and gas and is rated very high in potential for development of these resources. In addition, there are 1,867 acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the Plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted.

At present, there are two producing oil wells within the roadless area. Development may continue by offset drilling on adjoining production units on the same or adjoining leases within the area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or nonproductive wells. The 1,867 acres of outstanding minerals rights have been leased by the owner, and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing well were drilled on

State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area has high coal reserves and is rated moderate for potential coal development. The potential for hardrock, other than common varieties, is rated low.

The majority of recreational use occurs during hunting season for mule deer, sharptail grouse, and wild turkeys. It is estimated that the area produces 640 recreational visitor days with a capacity for 4,403. Other recreational uses of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The potential for infestation of the area by noxious weeds (particularly leafy spurge), insects, and disease exists.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from population centers in Montana and South Dakota. It is approximately 150 miles west of Bismarck, North Dakota, which is the largest town near the area.

The following chart displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

| Population Centers | Less Than 50 Miles | | 51-100 Miles | | 101-200 Miles | | 201-300 Miles | |
|--------------------|--------------------|-------|--------------|-------|---------------|--------|---------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is that portion of the Theodore Roosevelt Wilderness (National Park Service, USDI) located immediately north of the planning area.

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|-----------------------------|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(acres) | Ashland
(acres) | Grasslands
(acres) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |

Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest

| | Beartooth | Ashland | Grasslands |
|---------------------------------|-----------|---------|------------|
| Wilderness Within 100 Miles | | | |
| No. of Areas | 4 | 0 | 0 |
| No. of Acres | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | |
| No. of Areas | 3 | 5 | 1 |
| No. of Acres | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | |
| No. of Areas | 11 | 2 | 0 |
| No. of Acres | 5482381 | 584300 | 0 |

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Bennett-Cottonwood area, have been designated.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received,

10 responses referred to the Bennett-Cottonwood area specifically. Interest expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless. Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wil-

derness or a roadless designation for the Bennett-Cottonwood Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-30 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Bennett-Cottonwood is allocated to wilderness in Alternatives 4 (13,760 acres), 5a (13,760 acres) and 5b (13,760 acres).

The wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to nonuse. However an existing high standard road within the northeast portion of the unit would remain, as it provides access to two producing oil wells. When the road is no longer needed, it would be completely rehabilitated.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

TABLE C-30
MANAGEMENT EMPHASIS BY ALTERNATIVE
BENNETT-COTTONWOOD ROADLESS AREA L1DAY

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | | |
|----------------------------------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|------------|
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 | 9 PA 10 |
| Wilderness | | | | 13760 | | 13760 | 13760 | | | | | | | | | |
| Minimum Level (Roadless Mgmt.) | | | | | | | | | | | | | | | 10724 | |
| Minerals | | 1122 | 1130 | | 2106 | | | 2106 | 614 | 614 | 616 | 1134 | 1130 | 1130 | | 614 614 |
| Wildlife | 1163 | | | | | | | | 7364 | 7364 | 7387 | | | | | 7364 7364 |
| Range | | 2679 | | | | | | | | | | 2889 | 2680 | 2680 | | |
| Range/Wildlife/Minerals | | 9959 | 12630 | | 11654 | | | 11654 | | 5782 | 5757 | 9937 | 9950 | 9950 | 2689 | 5782 |
| Range/Wildlife/Minerals/Roadless | 12597 | | | | | | | | 5782 | | | | | | 347 | 5782 |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | | |
| Roadless | | | | | | | | | | | | | | | | |
| Decade 1 | 1163 | 13760 | 13760 | | 13760 | | | 13760 | 7978 | 13760 | 13760 | 13760 | 13760 | 13760 | 2689 | 13760 7978 |
| Decade 5 | 1163 | 13760 | 13760 | | 13760 | | | 13760 | 7978 | 13760 | 13760 | 13760 | 13760 | 13760 | 2689 | 13760 7978 |
| Roadless | | | | | | | | | | | | | | | | |
| Decade 1 | 12597 | | | | | | | | 5782 | | | | | | 11071 | 5782 |
| Decade 5 | 12597 | | | | | | | | 5782 | | | | | | 11071 | 5782 |
| Wilderness | | | | 13760 | | 13760 | 13760 | | | | | | | | | |

Depending on future mineral activity, wildlife habitat would otherwise probably not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the primary competition for forage. Disturbance of wildlife due to human activity would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change through natural ecological succession as affected by livestock grazing.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

Since the entire roadless area is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development continues. Since production has been established within the area, it could continue until the limits of the reserves are established by dry or nonproducing holes. Outstanding or reserved mineral rights (private minerals under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management. Under this wilderness prescription the area would be withdrawn after expiration of the existing leases if production is not established.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would improve and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Bennett-Cottonwood would increase.

- Soil, air and water qualities would improve from the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Bennett-Cottonwood is very high and the loss of these revenues could be high, both from leasing and future production. A wilderness prescription would also increase the costs of range management and specifically maintenance of range improvements, since motorized vehicles and equipment could be limited.

Social effects would be minimal since other resource values would be protected and activities such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness Management Prescription: Minimum Level

Alternative 8 allocates 10,724 acres to this prescription. Custodial or a minimum management level would be the theme of this allocation. The area would remain much as it is today, undeveloped and roadless. Management induced outputs would be reduced over time. There would be no new mineral leases issued and livestock grazing would be reduced over time. Wildlife habitat values and dispersed recreation would be left to occur naturally.

Since the entire roadless area is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The roadless resources could be irretrievably forgone if exploration and development continues. Since production has been established within the area, it could continue until the limits of the reserves are established by dry or nonproducing holes. Outstanding or reserved mineral rights are another overriding consideration which could affect the roadless nature of the area. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management. However, no new oil and gas leases would be issued and only minimal administration of existing developing sites would occur.

The lack of administration would affect the visual resource and may result in increased erosion and sediment load.

The range management strategy that would develop would be season-long due to deterioration of range improvements. The Conservation Practices program would be implemented at a very low level. Bottoms, woody draws and riparian zones would be severely impacted.

The wildlife management program would be eliminated. This would include wildlife surveys, habitat improvement, and habitat mitigation. Wildlife habitat within the woody draws and riparian

zones would deteriorate as livestock use would continue to occur.

Recreation would be allowed to occur. Off-road vehicle use could be expected to increase due to reduced Forest Service administration. This could bring about a loss of vegetation and soil erosion within certain areas.

Soil erosion could be expected to increase because of reduced ground cover brought about by improper grazing and off-road use. EVC-visual quality would also be adversely affected by these activities.

Nonpriced values would be affected as follows:

- Visual quality would be decreased.
- Soil and water quality would deteriorate within primary range and important wildlife habitat areas such as woody draws.
- The quality of primitive recreational activities, including hunting, will decrease within riparian and hardwood draws.
- Wilderness characteristics within primary grazing areas would be reduced.
- No additional acres would be added to the National Wilderness System.
- Depending on future mineral activity, the wilderness and roadless character of the area could be forgone.

The economic and social effects would be significant. The potential for oil and gas resources is high and the loss of these revenues from not issuing new leases could be high, both from leasing and future production. The reduction of livestock grazing over time would affect traditional lifestyles in the area. Some livestock producers could be forced to find other sources of forage for their livestock.

3. Designation: Nonwilderness Management Prescription: Range/Wildlife/Minerals

Bennett-Cottonwood is partially allocated to this prescription in every alternative except 1, 4, 5a, 5b, 6, and 10 (the Proposed Action). Acreages by alternative vary from 2,689 acres (20 percent) under Alternative 8 to 12,630 acres (92 percent) under Alternative 3. Average acreage for all the alternatives is approximately 57 percent.

The theme of this management prescription would be to maintain existing wildlife habitat values while also managing for the commodity products of livestock grazing and minerals production.

Under this management prescription, the wilderness and roadless character of a major part of the area would be irretrievably forgone.

No suitable timber exists in Bennett-Cottonwood. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production at or slightly above current levels while implementing intensive grazing systems in order to improve livestock distribution and overall forage utilization. The conservation practice program would be maintained at current funding levels. Range administration, inventories, and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at or below current levels. Hardwood draw habitats and general ground cover would be expected to remain at current levels. Structural range improvements would be emphasized over nonstructural.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values.

Some semi-primitive, non-motorized recreation opportunities would be available. However, as the area became developed, the recreation opportunity setting would tend to change to roaded natural appearing. Hunting would still be expected to be the primary recreational activity. Opportunities for solitude would decrease as the area became developed.

Nonpriced values would be affected as follows:

- Existing visual quality would be decreased.
- Security for big game, upland game birds and raptors would decrease.
- Soil, air and water qualities would decline slightly due to development activities within a major portion of the area.
- The wilderness and roadless character of the area would be forgone by the second period.

Economic effects would be minimal since most activities would occur at or near current levels.

4. Designation: Nonwilderness Management Prescription: Range/Wildlife/Minerals/Roadless

Bennett-Cottonwood is allocated to this prescription in Alternatives 1 (12,597 acres), 6 (5,782 acres), 8 (347 acres), and 10 (the Proposed Action) (5,782 acres). Approximately 42 percent of the area is designated to this management prescription in the Proposed Action alternative.

This management prescription would essentially maintain the current management strategy for this portion of the roadless area. The range, wildlife, and roadless values would remain the most important considerations.

No suitable timber exists in Bennett-Cottonwood. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at or below current levels. This would have some minor effects on the wilderness character of the area because of the construction of some range improvements. However, this should not preclude a wilderness designation at some later date.

The wildlife management program would include wildlife surveys, habitat improvement, and mitigating other resource impacts on wildlife. Wildlife goals would be to maintain or improve the habitat for deer, antelope, and grouse. This would impact the range management goals to a degree in that forage needs for wildlife must be recognized. Wildlife management goals would have no effect on wilderness/roadless attributes of the area.

This prescription would significantly affect the minerals management program. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new exploratory drilling would be allowed on Federal minerals.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained.
- Security for big game, upland game and nongame wildlife would remain the same.
- Soil, air and water quality would improve due to improved range management practices.
- The wilderness resource would remain basically intact unless development occurred on outstanding minerals.
- The recreation opportunity setting would remain as semi-primitive non-motorized.

The economic and social effects would be somewhat significant. More intensive range management would be more costly to the livestock producers. Motorized equipment could be used to construct and maintain range improvements as long as roads were not constructed. The loss of potential oil and gas revenues from leasing and production due to no surface occupancy stipulations could represent a significant economic loss.

5. Designation: Nonwilderness Management Prescription: Minerals

Bennett-Cottonwood is partially allocated to this prescription under Alternatives 2 (1,122 acres), 3 (1,130 acres), 5 (2,106 acres), 5c (2,106 acres), 6 (614 acres), 6a (614 acres), 6b (616 acres), 7 (1,134 acres), 7a (1,130 acres), 7b (1,130 acres), 9 (614 acres), and 10 (the Proposed Action) (614 acres).

This management prescription would emphasize the production of commodity products, namely minerals (oil and gas). It is recognized that a loss of other resource outputs may occur. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of that portion of the area as wilderness. This would mainly be due to the roading and development of the area.

Some short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Bennett-Cottonwood area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher.

Developments such as roads, well pads, pipelines, and powerlines would be constructed where needed in order to expedite production. Disturbance of habitat and displacement of wildlife due to human activity would be expected.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would degrade in these areas.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Harassment of wildlife would increase as additional roads are constructed.
- The quality of hunting and other primitive recreation opportunities would decrease greatly.
- The recreation opportunity setting would change from semi-primitive, non-motorized to roaded natural appearing.
- The wilderness attributes would be irretrievably lost on that portion of the area.

Economic effects would be significant in developed areas and would result in increased

revenues to both the Federal Treasury and local governments. Social effects would center mainly on local ranchers due to less suitable acreage for grazing, less AUM's, and reductions and/or changes in the size of their operations.

6. Designation: Nonwilderness
Management Prescription: Wildlife

Bennett-Cottonwood is partially allocated to this prescription under Alternatives 1 (1,163 acres), 6 (7,364 acres), 6a (7,364 acres), 6b (7,387 acres) and 9 (7,364 acres). This management prescription would emphasize wildlife outputs while recognizing that a loss of other resource outputs would occur.

Livestock grazing would continue but the management practices associated with this resource would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not to increase livestock numbers. Critical areas such as hardwood draws would be managed to optimize wildlife habitat values. Wildlife habitats would be inventoried to identify uses and opportunities that would improve the wildlife resource. In some areas livestock numbers would be reduced to meet wildlife management objectives.

The impacts of this management prescription to the wilderness attributes of the area could be substantial. Although stipulations would be applied to mineral leases to protect wildlife habitat, surface occupancy would be allowed. Roads and well pads would impact the wilderness quality of portions of the area precluding future wilderness classification.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted. Leases would contain no surface occupancy stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (i.e., calving and fawning areas, grouse dancing grounds). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off-years. Roads would be managed, as necessary, to protect wildlife values (i.e., road closures, limited access, etc.).

Nonpriced values would be affected as follows:

- Visual quality of the area would be decreased slightly.
- Wildlife would be protected from human disturbance over a majority of the area.
- Soil, air, and water qualities would remain at or near current levels.
- The quality of hunting and primitive recreational activities would remain high.
- The wilderness attributes would be lost over a portion of the area.

- No additional acres would be added to the National Wilderness System.

The economic effects of this alternative will be slight. Livestock grazing could be reduced but most likely will only be redistributed over the area. Oil and gas development will have numerous restrictions placed on it in wildlife areas, but these are not expected to significantly increase the cost of exploration.

Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

7. Designation: Nonwilderness
Management Prescription: Range

Bennett-Cottonwood is partially allocated to this prescription under Alternatives 2 (2,679 acres), 7 (2,689 acres), 7a (2,680 acres), and 7b (2,680 acres). This level of management would optimize livestock outputs in preference to other resource outputs, except to meet legal and administrative policies.

Intensive range management systems would be emphasized, including the use of structural and nonstructural improvements. Except to maintain minimum viable wildlife populations, all available forage would be allocated to livestock in these areas, and AUM's would be increased accordingly.

The quality and quantity of wildlife habitat would be reduced in areas managed under this prescription. Conflicts between wildlife and livestock would be settled in favor of wildlife only when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Wilderness characteristics would decline under this prescription, but would not be irrevocably lost. The greatest impact on wilderness would be structural range improvements. A range prescription would basically maintain this area in its natural state.

Nonpriced values would be affected as follows:

- Visual quality will be degraded in these areas and the acres of EVC-4 (disturbed) will increase.
- The quality of primitive recreational activities, including hunting, will remain at or near current levels.
- Security of big game and upland game birds would remain at or near current levels.
- No additional acres would be added to the National Wilderness System.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would remain at or near current levels. The ranching community would benefit from increased production and profits, but not significantly. The cost of oil exploration would increase slightly in certain situations.

BULLION BUTTE L1DBJ

GROSS ACRES — 19,130

NET ACRES — 17,760

I. INTRODUCTION AND DESCRIPTION

The Bullion Butte area is located approximately 45 miles southwest of Dickinson, North Dakota. Access is via Interstate 94 and State Highway 16, and then by County and Forest Service System roads.

The topography of the Bullion Butte area varies widely and is different from much of the rest of the Little Missouri National Grassland. Bullion Butte is the highest point (elevation 2,749 feet) and is an easily identifiable landmark. This butte is capped with sandstone, a remnant of a much earlier land surface. Adjacent to Bullion Butte is a large flat area named Big Plateau which has been dissected by feeder tributaries to the Little Missouri River. The Little Missouri River runs through the north-east portion of this area. Total vertical relief of the area is about 369 feet, from a low of 2,380 feet at the Little Missouri River to a high of 2,749 feet on Bullion Butte.

The dominant ecosystems of this area are Upland and River Breaks, Toe Slopes, River Bottoms and Upland Grasslands. Vegetation ranges from native prairie grassland on much of the area to hardwood trees (mainly cottonwood, green ash and American elm) and brush in the drainages. Rocky Mountain juniper pockets are extensive throughout the area as are arid shrub types on steep south facing slopes. Typical native grasses include western wheatgrass, green needlegrass, blue grama, little bluestem and threadleaf sedge, often found interspersed with silver sagebrush. This area also contains a ponderosa pine stand, which is unique to this part of North Dakota.

The Bullion Butte area provides prime habitat for a variety of big game including mule deer, white-tailed deer, pronghorn antelope and bighorn sheep, as well as non-game species. Game birds such as sharptail grouse, wild turkey and pheasant are found, as well as non-game birds and raptors such as golden eagles, hawks, and falcons. The Kinley Plateau roadless area is immediately adjacent to this area.

The Bullion Butte area is located 16 miles south of the Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, antelope, and grouse. Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

The Bullion Butte area is relatively undisturbed. Two dry oil and gas wells were drilled in the area but have been reclaimed to near natural conditions. There are a few old seismic trails originally constructed 20-30 years ago which are still used occasionally by local ranchers, hunters and recreationists.

Livestock developments (i.e., developed springs, fences, water wells, stock tanks, dugouts, etc.) detract from the natural setting although some range improvements have been constructed to blend with the natural characteristics.

b. Natural Appearance

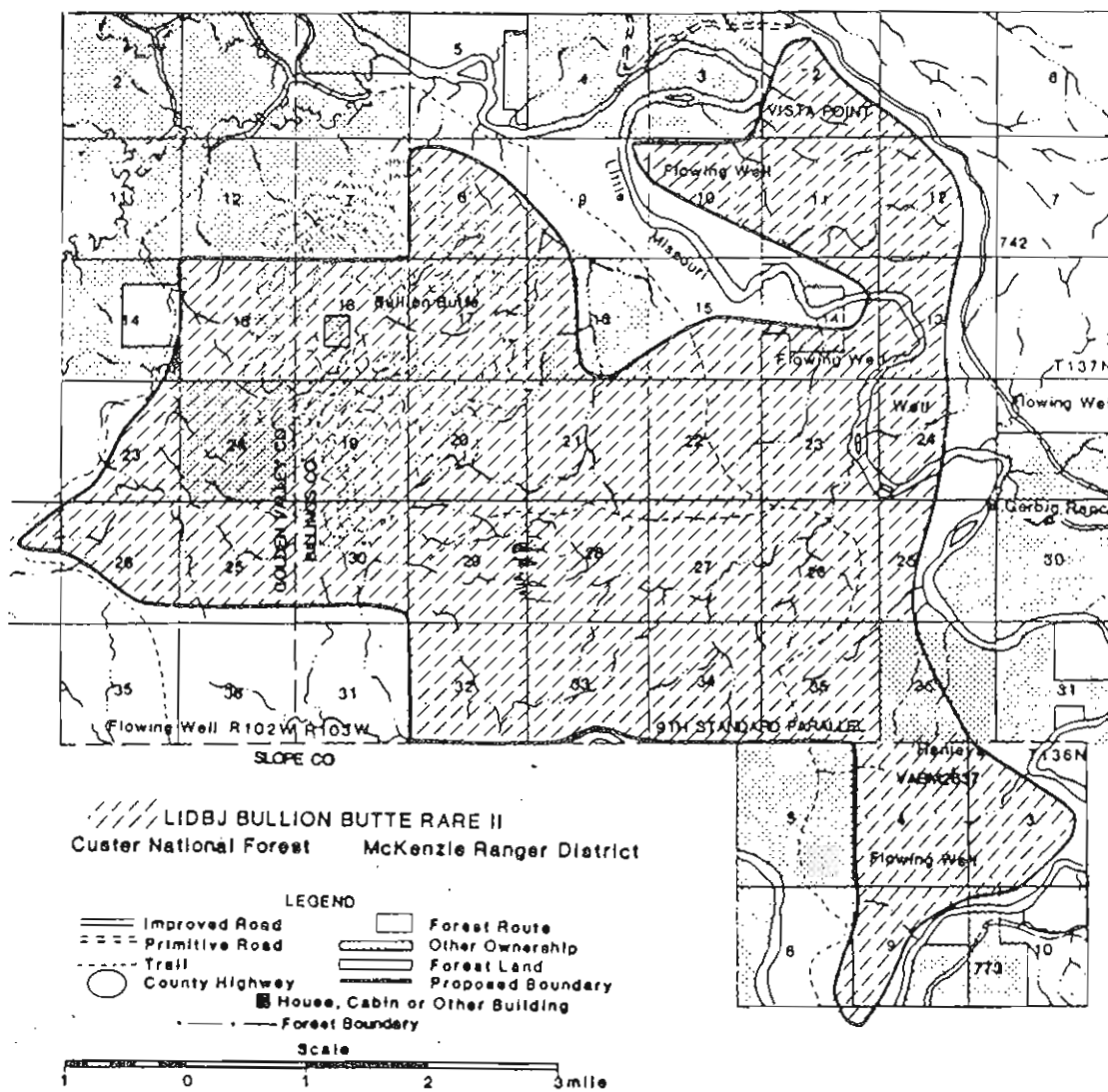
Overall, the roadless area retains a natural appearance representative of the rolling grasslands which are contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Because of the size and undeveloped nature of this area the opportunity for solitude is high. Improved roads can only be seen from around the perimeter, and the deep canyons and isolated dense stands of timber provide ample opportunities for solitude in the area. The presence of cattle is generally the only intrusion that reduces the opportunities.

d. Primitive Recreation Opportunities

Primitive recreation opportunities presently occurring are primarily hunting, hiking and horseback riding. With the exception of hunting, these are usually day use activities. There is moderate potential for these types of activities to increase, as the terrain lends itself well for horseback riding trails and hiking. Since the area is adjacent to the Kinley Plateau RARE II area the opportunity does exist for long-distance and overnight hikes. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers are common inhabitants, offering the challenge of coexistence. This area presents the opportunity to view and experience the badlands as they naturally exist.



e. Other Features

The high plateaus offer panoramic views of the surrounding area, including the Little Missouri River. From vantage points within the area one can see a diverse mosaic of landforms, vegetation and wildlife which are representative of western North Dakota. The Bullion Butte area presents the opportunity to view and experience the badlands as they naturally exist. Numerous cultural resource sites exist in this area.

2. Wilderness Manageability and Boundaries

The Bullion Butte roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 19,130 | 17,760 | RARE II Inventory |
| 0 | 0 | Oil and gas development |
| 19,130 | 17,760 | 1983 Roadless Inventory |

The boundaries of the Bullion Butte are generally well defined. Property lines define the south boundary, the Little Missouri River defines the east, Forest Road #742 delineates the north, and a two-track road defines the west boundary. The general recreationist may not be able to define where portions of the Bullion Butte area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (as the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness.

Bullion Butte contains 7,000 acres of outstanding mineral rights (i.e., subsurface rights are owned by other than the Federal government). Decision to develop the minerals is retained by the subsurface owner. In addition, other portions of the area are leased for oil and gas.

There are 1,370 acres of private or State lands within the unit.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

The Bullion Butte area contains significant amounts of prime big game habitat for mule deer, pronghorn antelope, and bighorn sheep, and part of the most productive area in the State for mule deer. It provides approximately 8,533 acres of summer habitat and 4,365 acres of winter habitat for mule deer and whitetailed deer, 2,669 acres of summer habitat and 1,193 acres of winter habitat

TABLE C-31
ROADLESS AREA RESOURCE SUMMARY
BULLION BUTTES ROADLESS AREA

Area Description: L1DBJ

Gross Acres: 19,130

Net Acres: 17,760

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 1,418 |
| SPM | RVD's | 157 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 15,203 |
| Allotments | # of | 6 |
| AUM's | AUM's | 8,652 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 0 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 11,868 |
| Winter Habitat | Acres | 5,892 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 8,533 |
| Winter Habitat | Acres | 4,365 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 666 |
| Winter Habitat | Acres | 334 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 2,669 |
| Winter Habitat | Acres | 1,193 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | Unknown |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 17,760 |

| Description | Units | Value |
|-----------------------|-------|--------|
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 17,760 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 6 |
| Leased Area | Acres | 17,760 |

for bighorn sheep, and 666 acres of summer habitat and 334 acres of winter habitat for pronghorn antelope. A wide variety of game and nongame birds occur, with sharptail grouse, wild turkey and pheasant as important game species. This also provides highly suitable habitat for cliff-nesting, tree-nesting and ground-nesting raptors. There are three known golden eagle nests that have been identified within the area, and it is probable more exist since a complete survey has not been finished. This area contains identified habitats for the black-footed ferret (T&E species) since prairie dog colonies have been found.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable, on 15,203 acres of the area and provides for 8,652 AUM's. There are six livestock range allotments within the Roadless Area. Range improvements include fences and stockwater developments.

The majority of the Bullion Butte Area is currently leased for oil and gas and is rated very high in potential for development of these resources. In addition, there are 7,000 acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted. At present, there are no producing oil wells within the roadless area. Development may occur by offset drilling from adjoining production units on the same or adjoining leases outside the roadless area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or nonproductive wells.

The 7,000 acres of outstanding minerals rights have been leased by the owner and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing

well were drilled on State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area has high coal reserves and is rated moderate for potential coal development. The potential for hardrock minerals, other than common varieties, is rated low.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer, antelope, and wild turkey. It is estimated that the area produces 1,575 recreational visitor days with a capacity for 5,683. Other recreational uses of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The potential for infestation of this area by noxious weeds, insects, and disease exists.

D. Need

1. Proximity to Designated Wilderness and to Population Centers

This roadless area is more than a 2-hour drive from population centers in Montana. The closest regional population center is Bismark, North Dakota, which is approximately 150 miles to the east.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

| Population Centers | Less Than 50 Miles | | 51-100 Miles | | 101-200 Miles | | 201-300 Miles | |
|--------------------|--------------------|-------|--------------|-------|---------------|--------|---------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

The closest wilderness area is the south unit of the Theodore Roosevelt National Park (National Park Service USDI), which is approximately 20 miles north of this area. Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest.

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|---|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(acres) | Ashland
(acres) | Grasslands
(acres) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |
| Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest | | | | | |
| | | | Beartooth | Ashland | Grasslands |
| Wilderness Within 100 Miles | | | | | |
| No. of Areas | | | 4 | 0 | 0 |
| No. of Acres | | | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | | | |
| No. of Areas | | | 3 | 5 | 1 |
| No. of Acres | | | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | | | |
| No. of Areas | | | 11 | 2 | 0 |
| No. of Acres | | | 5482381 | 584300 | 0 |

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Bullion Butte area have been designated as wilderness.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received,

8 responses referred to the Bullion Butte Area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless. Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest

Plan again indicated continued support for wilderness or a roadless designation for the Bullion Buttes Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-32 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Bullion Butte is allocated to wilderness in Alternatives 4 (15,642 acres), 5a (17,103 acres), 5b (17,760 acres) and 6a (17,760 acres).

Wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to nonuse. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Wildlife habitat would not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the

TABLE C-32
MANAGEMENT EMPHASIS BY ALTERNATIVE
BULLION BUTTE ROADLESS AREA L1DBJ

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | |
|----------------------------------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|
| | Alternative | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 |
| Wilderness | | | | 17760 | | 17103 | 17760 | | | 17760 | | | | | |
| Minimum Level (Roadless Mgmt.) | | | | | | | | | | | | | | | 664 |
| Minerals | | 9605 | 7240 | | | | | | | | 8911 | 6557 | 6557 | 6557 | |
| Wildlife | 2167 | 1610 | 1610 | | 664 | 657 | | 665 | 5400 | | 1611 | 1611 | 1610 | 1610 | 17760 6400 |
| Range | | 2613 | | | | | | | | | | 4972 | 4973 | 4973 | |
| Range/Wildlife/Minerals/Roadless | 15593 | | | | 17096 | | | 17095 | | | | | | | 17096 |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | |
| Roaded | | | | | | | | | | | | | | | |
| Decade 1 | 2167 | 17760 | 17760 | | 664 | 657 | | 665 | 17760 | | 17760 | 17760 | 17760 | 17760 | 17760 17760 |
| Decade 5 | 2167 | 17760 | 17760 | | 664 | 657 | | 665 | 17760 | | 17760 | 17760 | 17760 | 17760 | 17760 17760 |
| Roadless | | | | | | | | | | | | | | | |
| Decade 1 | 15593 | | | | 17096 | | | 17985 | | | | | | | 17760 |
| Decade 5 | 15593 | | | | 17096 | | | 17985 | | | | | | | 17760 |
| Wilderness | | | | 17760 | | 17103 | 17760 | | | 17760 | | | | | |

primary competition for forage. Harassment of wildlife would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change only through natural ecological succession.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

Since the entire roadless area is leased for oil and gas, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development continue. Outstanding or reserved mineral rights (private minerals under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision by the subsurface owners to enter and develop the area is a right not controlled by Forest Service management.

Primitive recreation opportunities would increase as would opportunities for solitude. Hunting would likely continue to be the primary recreational activity hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would increase, and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in the Bullion Butte area would increase.
- Soil, air and water qualities would improve as a result of the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Bullion Butte is very high and the loss of these revenues could be high, both from leasing and future production.

Social effects would be minimal since other resource values would be protected and activities such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness Management Prescription: Minimum Level

Alternative 8 allocates an insignificant area, 664 acres, to this prescription. No other alternatives utilize this prescription. This is only 4 percent of the total area. The impacts and consequences regarding wilderness or other resources is inconsequential.

3. Designation: Nonwilderness Management Prescription: Range/Wildlife/Minerals

Bullion Butte is partially allocated to this prescription in Alternatives 2 (3,932 acres), 3 (8,910 acres), 6b (7,238 acres), 7, 7a and 7b (4,620 acres). This management emphasizes the production of wildlife, range, and mineral resources of the area. This prescription would provide for the roading necessary to implement this management direction.

The wilderness qualities of the area would be directly affected by this management allocation due to roading as well as other management activities. Roads, well pads, and pipelines would forego any future wilderness classification in the near future.

No suitable timber exists in Bullion Butte. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain or increase AUM production, while implementing intensive grazing systems in order to improve livestock distribution. The conservation practices program would be maintained at current funding levels. Range administration, inventories and planning would be accomplished to meet targets and demands. Noxious weeds would be treated to maintain infestations at current levels. Hardwood draw habitats and general ground cover would be expected to improve. Structural range improvements would be emphasized over nonstructural. Additional range improvements would adversely impact the wilderness quality but would not generally preclude a wilderness classification.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values. Roading would be accomplished as needed to implement sound minerals management. Preplanning would be accomplished to mitigate impacts on the range and wildlife resource values. However, some long-term adverse effects on range and wildlife values would be expected to occur.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease.

Nonpriced values would be affected as follows:

- Existing visual quality would decrease.
- Security for big game, upland game birds and raptors would decline.
- Soil and water qualities would decrease as the area was developed.
- Recreational opportunity setting would change from semi-primitive non-motorized to roaded natural.
- The wilderness character would be for-gone on a major portion of the area.
- No additional acres would be added to the National Wilderness System.

Economic effects would be minimal since most activities would occur at near current levels.

4. Designation: Nonwilderness
Management Prescription:
Range/Wildlife/Minerals/Roadless

Bullion Butte is allocated to this prescription in Alternatives 1 (15,593 acres), 5, 5c and 8 (17,096 acres).

This management prescription would essentially maintain the current management emphasis and strategy for this area. The range, wildlife, and roadless values would remain the most important management considerations. Mineral exploration and development would be allowed, but the current no surface occupancy cut-off date would continue to be honored.

No suitable timber exists in Bullion Butte. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The conservation practices program would be maintained at current funding levels. Range administration, inventories and planning would be accomplished to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. Implementing intensive range management systems would necessitate some additional range improvements such as fences and water developments. This would impact the wilderness attributes of the area somewhat but would not preclude a wilderness designation at some later point in time. Intensive range management systems would, in general, benefit wildlife. Forage allocated to livestock could adversely affect wildlife. Hardwood draw habitats and general ground cover would be expected to improve.

The wildlife management program would include wildlife surveys, habitat improvement, and mitigation of other resource impacts on wildlife. Forage allocations to wildlife would have some minor effects on the amount of domestic livestock grazing that could occur on the area. Wildlife habitat within hardwood draws and primary grass range would be expected to improve because of intensive range management practices. Wildlife harassment and habitat displacement due to oil and gas development would not occur, as no new wildcat oil and gas exploration would be allowed.

This prescription would significantly affect the minerals management program on the area. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little or no effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new exploratory drilling would be allowed on Federal minerals. This type of dispersed recreational use would have no effect on the wilderness resource or other resource values.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained at or near current levels.
- Security for big game, upland game and nongame wildlife would remain the same.
- Soil, air and water quality would improve due to improved range management practices.
- Recreational opportunity setting would remain as semi-primitive, non-motorized.
- Although no additional acres would be added to the National Wilderness System, the wilderness character of the area would remain intact unless development occurred on outstanding mineral rights.

The economic and social effects of this management prescription could be significant. More intensive range management would be more costly to the livestock producers. In critical wildlife areas, livestock grazing levels may have to be reduced to meet wildlife management objectives. Not allowing surface occupancy would detract from future oil and gas revenues.

5. Designation: Nonwilderness
Management Prescription: Minerals

Bullion Butte is partially allocated to this prescrip-

tion under Alternatives 2 (9,605 acres), 3 (7,240 acres), 6b (8,911 acres), 7, 7a and 7b (6,557 acres). This management prescription would emphasize the production of commodity outputs, namely minerals. It is recognized that a loss of other resource values or outputs could occur.

Minor, short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Bullion Butte area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher.

Harassment of wildlife and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, powerlines, etc., would be constructed where needed in order to expedite production.

All minerals activities within the designated acreage would have priority over other resources. Mineral production would not be dependent on mitigation of other resources and leases in these areas would contain minimal stipulations. Common variety minerals such as scoria and gravel would be inventoried and made available for commercial sale.

The following nonpriced values would be affected:

- Soil, air and water qualities would degrade in these areas.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Harassment of wildlife would increase as additional roads are constructed.
- The quality of hunting and other primitive recreation opportunities would decrease greatly.
- The wilderness character would be forgone in developed areas by the second period.
- The recreation opportunity setting would change from semi-primitive, non-motorized to roaded natural appearing.

Wilderness characteristics would be forgone in and surrounding developed areas. If development were to extend into the interior of the Bullion Butte area, then wilderness qualities could be lost throughout the entire area. This is entirely dependent on where development occurs and is not predictable at this time.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments. Oil and gas revenues from NFS lands on the Medora Ranger District totalled approximately \$20 million in FY 1983. Twenty-five percent of these revenues were returned to the affected counties.

Social effects would center mainly on local ranchers due to less suitable acreage for grazing, less AUM's, and reductions and/or changes in the size of their operations.

6. Designation: Nonwilderness Management Prescription: Wildlife

Bullion Butte is partially allocated to this prescription under all of the alternatives except 4, 5b, 6a, and 8. Acreage by alternative ranges from 657 acres (4 percent) under Alternative 5a to 17,760 (100 percent) under Alternatives 6 and 9. Average acreage for all alternatives is approximately 20 percent.

This level of management emphasizes wildlife outputs while recognizing that a loss of other resource outputs would occur.

Livestock grazing would continue but the management practices associated with this resource activity would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not necessarily to increase livestock numbers. Critical areas such as hardwood draws would be managed to optimize wildlife habitat values. Some reductions in livestock numbers would be initiated to enhance the production of wildlife habitat.

Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife. Improvement techniques such as burning, tree cutting, water developments and vegetative manipulation will be used to increase wildlife outputs wherever possible.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted. Leases would contain no surface occupancy stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (calving and fawning areas, grouse dancing grounds, etc.). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off-years. Roads would be managed as necessary to protect wildlife values (i.e., road closures, limited access, etc.)

Nonpriced values would be affected as follows:

- Visual quality of the area would remain unchanged.
- Wildlife would be protected from disturbance from human activity.
- Soil, air, and water qualities would improve as range conditions improved.
- The quality of hunting and primitive recreational activities would remain high.
- Although no acres would be added to the National Wilderness System, wilderness characteristics would be retained.

- Opportunities for primitive recreation and solitude would exist much as they are presently.

The economic effects of this alternative would be significant. Livestock grazing would be reduced substantially in some areas to accomplish wildlife objectives. Restrictions or stipulations on oil and gas leases would affect the overall production of the mineral resources and, therefore, possible future revenues to the Federal Treasury and state counties.

Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

7. Designation: Nonwilderness
Management Prescription: Range

Bullion Butte is partially allocated to this prescription under Alternatives 2 (2,613 acres), 7, 7a and 7b (4,973 acres). This management prescription would emphasize livestock outputs.

Intensive range management systems would be emphasized, including the use of structural and non-structural improvements. Except to maintain minimum viable wildlife populations, all available forage would be allocated to livestock and AUM's would be increased accordingly.

The quality and quantity of wildlife habitat would be reduced under this prescription. Conflicts between wildlife and livestock would be settled in

favor of wildlife except when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Nonpriced values would be affected as follows:

- Visual quality will degrade in these areas and the acres of EVC-4 (disturbed) will increase.
- The quality of primitive recreational activities including hunting will decrease.
- Security of big game and upland game birds would decrease.
- Wilderness characteristics would decline under this prescription, but would not be irrevocably lost.
- No acres would be added to the National Wilderness System.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would decrease. The ranching community would benefit from increased production and profits but not significantly. The costs of oil exploration would increase slightly in certain situations. Some local economies might be adversely impacted due to the loss of revenue associated with certain recreational activities such as hunting.

KINLEY PLATEAU L1DBI

GROSS ACRES — 21,120

NET ACRES — 19,360

I. INTRODUCTION AND DESCRIPTION

The Kinley Plateau Area is located approximately 35 miles southwest of Dickinson, North Dakota. Access is via Interstate 94 and U.S. Highway 85, and then by County and Forest Service System roads.

The Kinley Plateau roadless area is located within the Little Missouri Badlands, a biogeographical subunit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands, flat ridges and plateaus, to extremely rugged "badlands" terrain with deeply incised stream channels. Elevation varies from 2,500 feet to 2,900 feet above sea level.

The rough broken terrain within the area has limited plant growth. On some of the non-grass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt brush, and greasewood. Many of the gulches and steep drainages on north-facing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama, with little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffaloberry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others.

The alluvial floodplains support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive wheatgrass stands.

The Kinley Plateau area provides prime habitat for a variety of big game including mule deer, whitetailed deer, pronghorn antelope, and big-horn sheep, as well as nongame species. Game birds such as sharptailed grouse, wild turkey, and pheasant are found, as well as nongame birds and raptors.

The Kinley Plateau roadless area borders the Bullion Butte roadless area on the southwest.

The Kinley Plateau area is located 20 miles south of the Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, antelope, and grouse.

Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

The Kinley Plateau area is relatively undisturbed by human activity and the natural integrity of the area has remained high. There are a few old seismic trails originally constructed 20-30 years ago which are still used occasionally by local ranchers, hunters, and recreationists. Except for a small amount of acreage (less than 250 acres), which was planted to crested wheatgrass, the area is in native grasses. A limited infestation of leafy spurge is present which has been treated with herbicide in the past. The only other intrusions are a few range improvements such as stockdams, fences, and water pipelines (underground).

b. Natural Appearance

Overall, the roadless area retains a natural appearance representative of the rolling grasslands which are contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offers opportunity for isolation among the canyons. This is contrasted by the open spaces of the grasslands.

d. Primitive Recreation Opportunities

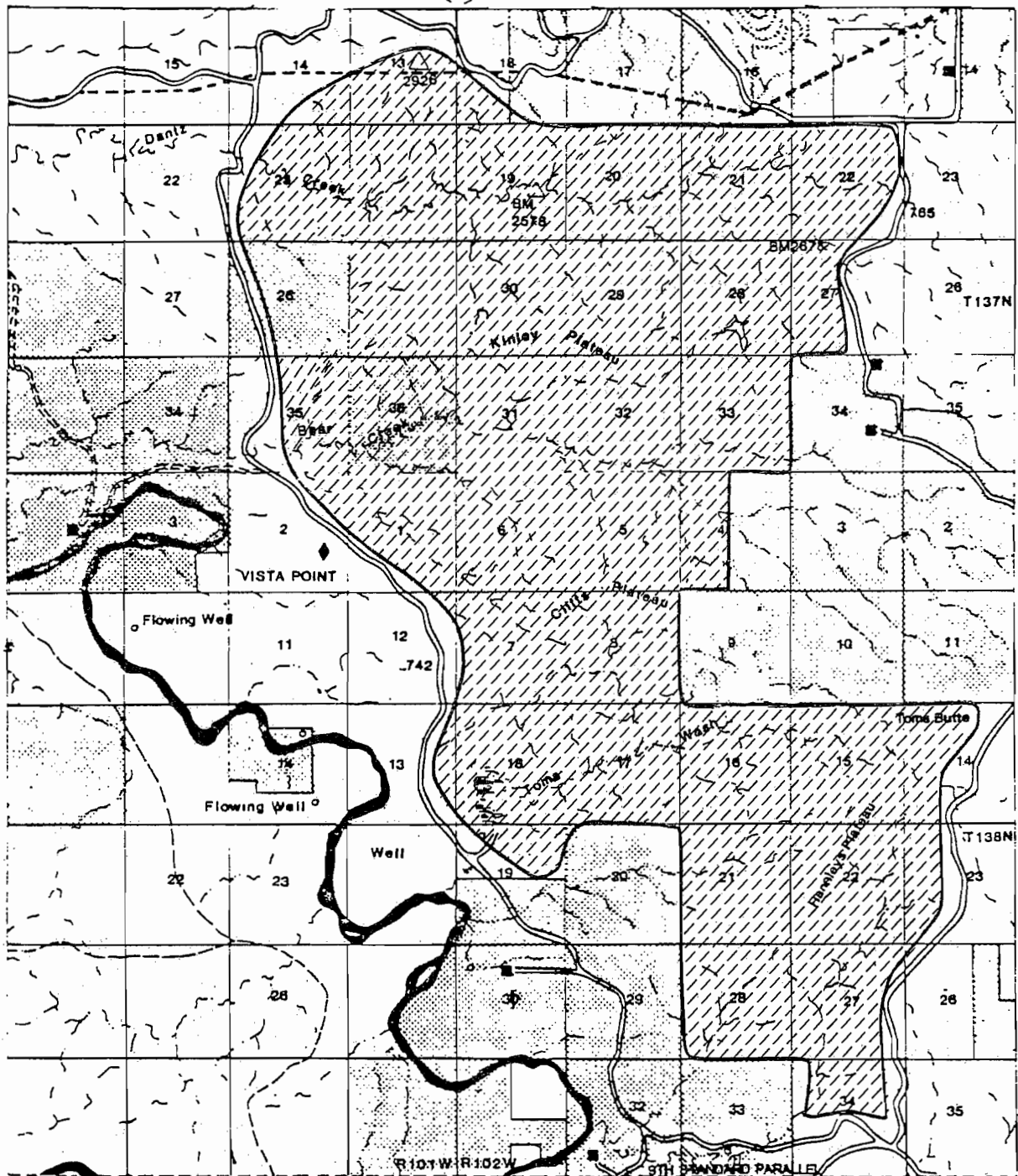
There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially dangerous, are common inhabitants offering the challenge of coexistence. Hiking trails are nonexistent.

e. Other Features

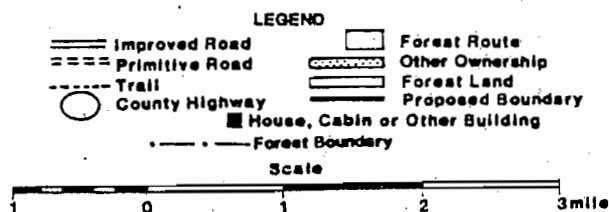
The area contains several archeological sites which represent prehistoric occupations and/or historical homestead sites.

Golden eagles are often seen and prairie falcons are occasionally observed within the area.

The Kinley Plateau area presents the opportunity



LIDBI KINLEY PLATEAU RARE II
Custer National Forest McKenzie Ranger District



to view and experience the badlands as they naturally exist.

2. Wilderness Manageability and Boundaries

The Kinley Plateau roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 21,120 | 19,360 | RARE II Inventory |
| 0 | 0 | Oil and gas development |
| 21,120 | 19,360 | 1983 Roadless Inventory |

The boundaries of the Kinley Plateau area are generally well defined. Improved roads define the boundaries on most of the unit, while the other boundaries are delineated by property lines. The section lines are not currently posted, but could be determined from GLO surveys. The general recreationist may not be able to define where portions of the Kinley Plateau area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (of which the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness.

The majority of the non-conforming activities within the area center around minerals and range management activities. Since the entire area is leased for oil and gas exploration, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are limited to the following:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Kinley Plateau contains 7,010 acres of outstanding mineral rights (i.e., subsurface rights are owned by other than the Federal government). These kinds of rights are another overriding con-

sideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-33
ROADLESS AREA RESOURCE SUMMARY
KINLEY PLATEAU ROADLESS AREA

Area Description: L1DBI
Gross Acres: 21,120
Net Acres: 19,360

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 1,750 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 16,216 |
| Allotments | # of | 7 |
| AUM's | AUM's | 8,100 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 1 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 12,906 |
| Winter Habitat | Acres | 6,454 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 7,840 |
| Winter Habitat | Acres | 3,920 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 3,360 |
| Winter Habitat | Acres | 1,680 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 1,706 |
| Winter Habitat | Acres | 854 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | 0 |

| Description | Units | Value |
|-----------------------|-------|--------|
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 19,360 |
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 19,360 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 12 |
| Leased Area | Acres | 19,360 |

The Kinley Plateau area contains significant amounts of prime big game habitat for mule deer, pronghorn antelope, and bighorn sheep, and is part of the most productive area in the State for mule deer. It provides approximately 11,200 acres of summer habitat and 5,600 acres of winter habitat for mule deer, whitetailed deer, and pronghorn antelope; and 1,706 acres of summer habitat and 854 acres of winter habitat for bighorn sheep. This area has been identified as an additional release area for bighorn sheep by the North Dakota Game and Fish Department. A wide variety of game and nongame birds occur, with sharptail grouse, wild turkey and pheasant as important game species. This area also provides highly suitable habitat for cliff nesting, tree nesting, and ground nesting raptors. There are three known golden eagle nests that have been identified within the area and it is probable more exist since a complete survey has not been finished. This area contains no identified habitat for the black-footed ferret (threatened and endangered species) since no prairie dog colonies have been found.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 16,216 acres of the area and provides for 8,100 AUM's. There are seven livestock range allotments within the roadless area. Range improvements include fences and stockwater developments.

All of the Kinley Plateau Area is currently leased for oil and gas and is rated very high in potential for development of these resources. In addition, there are 7,010 acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the Plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted.

At present, there are no producing oil wells within the roadless area. Development may occur by offset drilling from adjoining production units on the same or adjoining leases outside the roadless area. Offset drilling will be allowed until the limits of any "discovery" pool are defined through dry or nonproductive wells.

The 7,010 acres of outstanding minerals rights have been leased by the owner and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing well were drilled on State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area has high coal reserves and is rated moderate for potential coal development. The potential for hardrock, other than common varieties, is rated low.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer and antelope. It is estimated that the area produces 1,750 recreational visitor days with a capacity for 6,195. Other recreational uses of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The potential for infestation of this area by noxious weeds, insects, and disease exists.

D. Need

1. Proximity to Designated Wilderness and to Population Centers

This roadless area is more than a two-hour drive from population centers in Montana and South Dakota. The area is approximately 150 miles west of Bismarck, North Dakota, and 150 north of Rapid City, South Dakota.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is the Theodore Roosevelt Wilderness located approximately 20 miles north of the planning area.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

| Population Centers | Less Than 50 Miles | | 51-100 Miles | | 101-200 Miles | | 201-300 Miles | |
|--------------------|--------------------|-------|--------------|-------|---------------|--------|---------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Kinley Plateau area, have been designated.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 10 responses referred to the Kinley Plateau Area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless.

Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Ash Coulee Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in

North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-34 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Kinley Plateau is allocated to wilderness in Alternatives 4, 5a, 5b and 6b. All of the adjusted net acres (7,140) are allocated to wilderness in these alternatives.

Wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to nonuse. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Wildlife habitat would not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the primary competition for forage. Possible disturbance of wildlife due to human activity would be

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|-----------------------------|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(acres) | Ashland
(acres) | Grasslands
(acres) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |

Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest

| | Beartooth | Ashland | Grasslands |
|---------------------------------|-----------|---------|------------|
| Wilderness Within 100 Miles | | | |
| No. of Areas | 4 | 0 | 0 |
| No. of Acres | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | |
| No. of Areas | 3 | 5 | 1 |
| No. of Acres | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | |
| No. of Areas | 11 | 2 | 0 |
| No. of Acres | 5482381 | 584300 | 0 |

TABLE C-34
MANAGEMENT EMPHASIS BY ALTERNATIVE
KINLEY PLATEAU ROADLESS AREA L1DBI

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | |
|-----------------------------------|--------------------------------|-------|-------|-------|-------|----|-------|-------------------|-------|-------|----|-------|-------|-------|-------------------|
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | Alternative
5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 |
| Wilderness | | | | 19360 | | | 19360 | 19360 | | | | 19360 | | | |
| Minimum Level
(Roadless Mgmt.) | | | | | | | | | | | | | | | 872 |
| Minerals | | 1983 | 845 | | 872 | | | 845 | | 845 | | | | | |
| Wildlife | | 1263 | 8418 | | | | | | 13020 | 8418 | | 1263 | 1262 | 1262 | 19360 13020 |
| Range | | 4334 | | | | | | | | | | 4335 | 4335 | 4335 | |
| Range/Wildlife/
Minerals | | 11780 | 10097 | | | | | | 6340 | 10097 | | 13762 | 13763 | 13763 | 6340 |
| Range/Wildlife/
Minerals/Rdlss | 19360 | | | | 18488 | | | 18515 | | | | | | | 18488 |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | |
| Roaded | | | | | | | | | | | | | | | |
| Decade 1 | | 19360 | 19360 | | 872 | | | 845 | 19360 | 19360 | | 19360 | 19360 | 19360 | 18488 19360 19360 |
| Decade 5 | | 19360 | 19360 | | 872 | | | 845 | 19360 | 19360 | | 19360 | 19360 | 19360 | 18488 19360 19360 |
| Roadless | | | | | | | | | | | | | | | |
| Decade 1 | 19360 | | | | 18488 | | | 18515 | | | | | | | 872 |
| Decade 5 | 19360 | | | | 18488 | | | 18515 | | | | | | | 872 |
| Wilderness | | | | 19360 | | | 19360 | 19360 | | | | 19360 | | | |

reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change only through natural ecological succession as affected by grazing.

Domestic livestock grazing would continue at or near present levels. Livestock grazing presently permitted for 8,100 AUM's could continue on the 7 allotments involved, but management practices could possibly change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

A wilderness prescription would significantly affect the future minerals management program and the potential to produce any oil and gas reserves found within the area. If existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would improve, and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Kinley Plateau would increase.
- Soil, air and water qualities would improve from the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Kinley Plateau is very high and the loss of these revenues could be high, both from future leasing and minerals production.

Social effects would be minimal since other resource values would be protected and activities such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness
Management Prescription: Minimum Level

Alternative 1 allocates an insignificant area, 872 acres (5 percent) to this prescription. No other alternative utilizes this prescription. The impacts and consequences of this prescription allocation to this small area in regard to wilderness or other resources are inconsequential. Some minor

adjustments in the boundaries of the area could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

3. Designation: Nonwilderness
Management Prescription:
Range/Wildlife/Minerals

Kinley Plateau is partially allocated to this prescription in Alternatives 2, 3, 6, 6a, 7, 7a, 7b, and 10. Acreage by prescription varies from 6,340 (33 percent) in Alternatives 6 and 10 (the Proposed Action) to 13,763 (71 percent) under Alternatives 7, 7a and 7b. Average acreage for all alternatives is approximately 56 percent.

The theme of this management prescription would be to maintain existing wildlife habitat values while also managing for the commodity products of livestock grazing and minerals production.

No suitable timber exists in Kinley Plateau. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production at or slightly above current levels while implementing intensive grazing systems in order to improve livestock distribution and overall forage utilization. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. Hardwood draw habitats and general ground cover would be expected to improve. Structural range improvements would be emphasized over nonstructural. Management practices associated with this prescription could significantly impact the wilderness attributes of the area. Although most of the effects would be through decreasing the visual quality, the range management practice could result in roading which would preclude a future wilderness classification.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values. Development of the oil and gas resources would preclude a possible wilderness classification for the area.

Some semi-primitive non-motorized recreation opportunities would remain available. However, as the area became developed, the recreation opportunity setting would tend to change to roaded natural appearing. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease.

Nonpriced values would be affected as follows:

- Existing visual quality would decrease as the area became developed.
- Security for big game, upland game birds and raptors would decrease slightly.
- Soil, air and water qualities would remain at or near current levels.
- The wilderness resource would be forgone.
- The recreation opportunity setting on parts of the area would change from semi-primitive non-motorized to semi-primitive motorized.

Economic effects would be minimal since most activities would occur at near current levels.

Social effects would be minimal under all alternatives.

4. Designation: Nonwilderness
Management Prescription: Range/
Wildlife/Minerals/Roadless

Kinley Plateau is allocated to this prescription in Alternatives 1 (19,360 acres), 5 (18,488 acres), 5c (18,515 acres) and 8 (18,488 acres).

This management prescription would essentially maintain the current management strategy for the area. The range, wildlife, and roadless values would remain the most important considerations.

No suitable timber exists in Kinley Plateau. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. This would have some minor effects on the wilderness character of the area because of the construction of some range improvements. However, this should not preclude a wilderness designation at some later date.

The wildlife management program would include wildlife surveys, habitat improvement, and the mitigation of other resource impacts on wildlife. Wildlife goals would be to maintain or improve the habitat for deer, antelope, and grouse. This would impact the range management goals to a degree in that forage needs for wildlife must be recognized. Wildlife management goals would have little or no effect on the wilderness/roadless attributes of the area. Wildlife habitat within hardwood draws and primary grass range would be expected to improve because of intensive range management practices. Disturbance of wildlife due to human activity would not occur.

This prescription would significantly affect the mineral management program. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained at or near current levels.
- Security for big game, upland game and nongame wildlife would remain the same. Soil, air and water quality would improve due to improved range management practices.
- Although no acres would be added to the National Wilderness System, the wilderness resource would remain basically intact unless development occurred on outstanding minerals.

Not allowing surface occupancy would detract from future oil and gas revenues.

5. Designation: Nonwilderness
Management Prescription: Minerals

Kinley Plateau is partially allocated to this prescription under Alternatives 2 (1,983 acres), 3 (845 acres), 5 (872 acres), 5c (845 acres) and 6a (845 acres).

This management prescription would emphasize the production of commodity products, namely minerals (oil and gas). It is recognized that a loss of other resource outputs may occur.

Minor, short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Kinley Plateau area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher.

Disturbance to wildlife and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, and powerlines would be constructed where needed in order to expedite production.

All minerals activities within the designated acreage would have priority over other resources. Mineral production would not be dependent on mitigation of other resources and leases in these areas would contain minimal stipulations. Common variety minerals such as scoria and gravel would be inventoried and made available for

commercial sale. Production of the mineral resource would significantly impact the wilderness/roadless attributes of the area and would probably preclude a future wilderness classification.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would decrease due to development.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Disturbance of wildlife and wildlife displacement would increase as additional roads are constructed.
- The quality of hunting and other primitive recreation opportunities would decrease.
- Wilderness characteristics would be forgone in and surrounding developed areas.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments. Social effects would center mainly on local ranchers due to less suitable acreage for grazing, less AUM's, and reductions and/or changes in the size of their operations.

6. Designation: Nonwilderness
Management Prescription: Wildlife

Kinley Plateau is partially allocated to this prescription under Alternatives 2 (1,263 acres), 3 (8,418 acres), 6 (13,020 acres), 6a (8,418 acres), 7 (1,263 acres), 7a (1,262 acres), 7b (1,262 acres), 9 (19,360 acres), and 10 (the Proposed Action) (13,020 acres).

This level of management emphasizes wildlife outputs while recognizing that a loss of other resource outputs would occur.

Livestock grazing would continue, but the management practices associated with this resource would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not to increase livestock numbers. Critical areas such as hardwood draws would be managed to optimize wildlife habitat values. In some areas livestock numbers would be reduced substantially to meet wildlife management objectives.

Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife. Improvement techniques such as burning, tree cutting, water developments and vegetative manipulation will be used to increase wildlife outputs wherever possible. This could adversely affect the wilderness attributes of the area, but would probably not preclude a future wilderness classification.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted.

Leases would contain no surface occupancy stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (i.e., calving and fawning areas, grouse dancing grounds). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off-years. Roads would be managed as necessary to protect wildlife values (i.e. road closures, limited access, etc.)

Nonpriced values would be affected as follows:

- Visual quality of the area would decline slightly.
- Wildlife would be protected from human disturbance.
- Soil, air, and water qualities would remain at or near current levels.
- The quality of hunting and primitive recreational activities would remain high.
- No acres would be added to the National Wilderness System.

The economic affects of this alternative will be slight. Livestock grazing could be reduced but most likely will only be redistributed over the area. Oil and gas development will have numerous restrictions placed on it in wildlife areas but these are not expected to significantly increase the cost of exploration.

Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

7. Designation: Nonwilderness Management Prescription: Range

Kinley Plateau is partially allocated to this prescription under Alternatives 2 (4,334 acres), 7 (4,335 acres), 7a (4,335 acres) and 7b (4,335 acres).

This level of management would optimize livestock outputs in preference to other resource outputs, except to meet legal and administrative policies.

Intensive range management systems would be emphasized, including the use of structural and non-structural improvements. Except to maintain minimum viable wildlife populations, all available forage would be allocated to livestock in these areas and AUM's would be increased accordingly.

The quality and quantity of wildlife habitat would be reduced in areas managed under this prescription. Conflicts between wildlife and livestock would be settled in favor of wildlife only when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Wilderness characteristics would decline under this prescription but would not be irrevocably lost. The greatest impact on wilderness would be the structural range improvements, but non-structural improvements such as fertilization would enhance vegetative growth and the overall natural appearance of the area. A range prescription would basically maintain this area in its natural state.

Nonpriced values would be affected as follows:

- Visual quality will degrade in these areas and the acres of EVC-4 (disturbed) will increase.
- The quality of primitive recreational activities including hunting will remain at or near current levels.
- Security of big game and upland game birds would remain at or near current levels.
- No additional acres would be added to the National Wilderness System.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would remain at or near current levels. The ranching community would benefit from increased production and profits, but not significantly. The costs of oil exploration would increase slightly in certain situations.

LONE BUTTE L1DAX

GROSS ACRES — 7,680

NET ACRES — 7,140

I. INTRODUCTION AND DESCRIPTION

The Lone Butte Area is located approximately 50 miles southeast of Williston, and 20 miles southeast of Watford City, North Dakota. Access is via State Highway 85, and then by County and Forest Service System roads.

The Lone Butte roadless area is located within the Little Missouri Badlands, a biogeographical sub-unit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of upland grasslands are interspersed between upland breaks. Elevation varies from 2,000 feet to 2,749 feet above sea level.

The rough broken terrain within the area has limited plant growth. On some of the non-grass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt brush and greasewood. Many of the gulches, and steep drainages on northfacing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama with little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffalo berry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others.

The alluvial floodplains along Dry Creek support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive wheatgrass stands.

The Lone Butte area supports viable populations of mule deer, white-tailed deer, turkeys, and sharptail grouse. The unit also provides suitable bighorn sheep habitat and has been identified by the North Dakota Game and Fish Department as a high priority transplant site. Although the wildlife habitats and species represented within the Lone Butte area are not unique within the Little Missouri National Grasslands, they are considered important to the State of North Dakota.

The Lone Butte area is located 3 miles southeast of the Theodore Roosevelt National Park north unit within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, grouse, and wild turkeys. Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

Several old seismic trails are found within the unit and are occasionally used by local ranchers, hunters, and recreationists.

Livestock developments (i.e., developed springs, fences, water wells, stock tanks, dugouts) detract from the natural setting, although most range improvements have been constructed to blend with the natural characteristics.

b. Natural Appearance

Overall, the roadless area retains a natural appearance representative of the rolling grasslands which is contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offer opportunity for isolation among the canyons.

d. Primitive Recreation Opportunities

There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures can reach to over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially dangerous, are common inhabitants offering the challenge of coexistence. Hiking trails are nonexistent.

e. Other Features

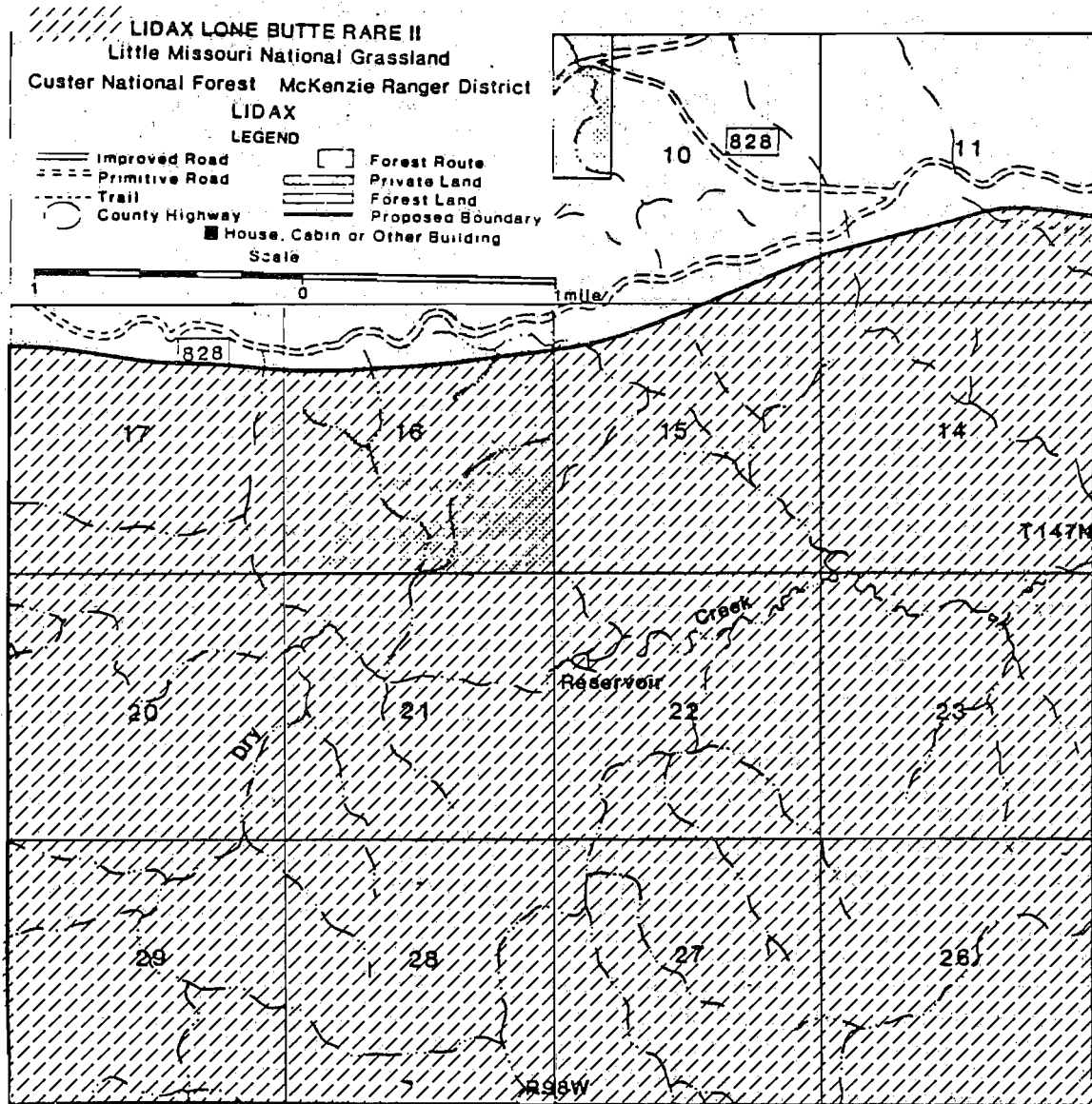
The area contains many archeological sites which represent prehistoric occupations and historical homestead sites.

Golden eagles are frequently seen, and prairie falcon are occasionally observed, within the area.

The Lone Butte area presents the opportunity to view and experience the badlands as they naturally exist.

2. Wilderness Manageability and Boundaries

The Lone Butte roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was



designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 13,080 | 12,920 | RARE II Inventory |
| - 5,400 | - 5,780 | Oil and gas development |
| 7,680 | 7,140 | 1983 Roadless Inventory |

The boundaries of the Lone Butte area are generally well defined. The north boundary is a two-track dirt road, while the west, south, and east are delineated by section lines. The section lines are not currently posted, but could be determined from GLO surveys. The general recreationist may not be able to define where portions of the Lone Butte area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (of which the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness. The majority of the non-conforming activities within the area center around minerals and range management activities. Since the entire area is leased for oil and gas exploration, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are as follows:

- Honor the leases until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

The Lone Butte area contains 540 acres of outstanding mineral rights (i.e., subsurface rights that are owned by other than the Federal government). Outstanding or reserved mineral rights are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-35
ROADLESS AREA RESOURCE SUMMARY
LONE BUTTE ROADLESS AREA

Area Description: L1DAX
Gross Acres: 7,680
Net Acres: 7,140

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 1,395 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 2,464 |
| Allotments | # of | 1 |
| AUM's | AUM's | 2,451 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 1 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 4,974 |
| Winter Habitat | Acres | 2,166 |
| Specific — Elk | | |
| Summer Habitat | Acres | 150 |
| Winter Habitat | Acres | 150 |
| Specific — Deer | | |
| Summer Habitat | Acres | 3,866 |
| Winter Habitat | Acres | 1,597 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 958 |
| Winter Habitat | Acres | 419 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | 0 |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |

| Description | Units | Value |
|-----------------------|-------|-------|
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 7,140 |
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 7,140 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 11 |
| Leased Area | Acres | 7,140 |

The Lone Butte area contains significant habitat for mule deer, bighorn sheep, and elk. The area provides approximately 3,866 acres of summer habitat and 1,597 acres of winter habitat for mule deer, 958 acres of summer habitat and 419 acres of winter habitat for bighorn sheep, and 300 acres of summer and winter habitat for elk. A herd of 75 to 100 elk presently use only a portion of this area. Most of their time is spent north and east of the unit along the Little Missouri River. The size of the herd has been steadily expanding and will be subject to hunting for the first time in 1984. Although there are presently no bighorn sheep in the unit, the North Dakota Game and Fish Department has designated the area as a high priority transplant site. There are four golden eagle nests and two known prairie falcon eyries within the unit. It is probable that more nest/erie sites exist since a complete survey has not been conducted. Wild turkeys and sharptailed grouse exist throughout the area as well as many nongame species.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 2,464 acres of the area and provides for 2,451 AUM's. There is one livestock range allotment within the roadless area. Range improvements include fences and stockwater developments.

The majority of the Lone Butte Area is currently leased for oil and gas and is rated very high in potential for development of these resources. In addition, there are 540 acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the Plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease exist-

ing at the time the Badlands Land Management Plan was adopted.

At present, there are no producing oil wells within the roadless area. Development may occur by offset drilling from adjoining production units on the same or adjoining leases outside the roadless area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or nonproductive wells.

The 540 acres of outstanding minerals rights have been leased by the owner and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing well were drilled on State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area has high coal reserves and is rated moderate for potential coal development. The potential for hardrock, other than common varieties, is rated low.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer, and turkeys. It is estimated that the area produces 1,395 recreational visitor days with a capacity for 2,300. Other recreational uses of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

The potential for infestation of the area by noxious weeds (particularly leafy spurge), insects, and disease exists.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from the important regional population centers. The closest largest towns are Bismarck, North Dakota, and Rapid City, South Dakota, which are approximately 125 and 230 miles away, respectively.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is the Theodore Roosevelt Wilderness located approximately 3 miles northwest of the planning area.

**REGIONAL POPULATION CENTERS* AND
PROXIMITY TO ROADLESS AREAS ON
THE CUSTER NATIONAL FOREST**

| Population
Centers | Less Than
50 Miles | | 51-100 Miles | | 101-200
Miles | | 201-300
Miles | |
|-----------------------|-----------------------|-------|--------------|-------|------------------|--------|------------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Blismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

**CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST**

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|-----------------------------|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(areas) | Ashland
(areas) | Grasslands
(areas) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |

**Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest**

| | Beartooth | Ashland | Grasslands |
|---------------------------------|-----------|---------|------------|
| Wilderness Within 100 Miles | | | |
| No. of Areas | 4 | 0 | 0 |
| No. of Acres | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | |
| No. of Areas | 3 | 5 | 1 |
| No. of Acres | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | |
| No. of Areas | 11 | 2 | 0 |
| No. of Acres | 5482381 | 584300 | 0 |

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Lone Butte area, have been designated.

3. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 6 responses referred to the Lone Butte Area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless.

Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Ash Coulee Roadless Area. By far the majority of those who responded to the wilderness/roadless

issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-36 describes prescription assignment by alternative.

TABLE C-36
MANAGEMENT EMPHASIS BY ALTERNATIVE
LONE BUTTE ROADLESS AREA L1DAX

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | PA 10 |
|----------------------------------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 |
| Wilderness | | | | 7140 | | 7140 | 7140 | | | | 7140 | | | | |
| Minerals | | | 357 | | 357 | | | 3576 | | | | | | | |
| Wildlife | 555 | | | | | | | | 882 | 2110 | | | | | 2110 882 |
| Range | | 2546 | | | | | | | | | | 2712 | 2715 | 2715 | |
| Range/Wildlife/Minerals | | 4594 | 6783 | | 6783 | | | 6783 | | 5030 | | 4428 | 4425 | 4425 | 7140 5030 |
| Range/Wildlife/Minerals/Roadless | 6585 | | | | | | | | 6258 | | | | | | 6258 |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | |
| Roadless | | | | | | | | | | | | | | | |
| Decade 1 | 555 | 7140 | 7140 | | 7140 | | | 7140 | 882 | 7140 | | 7140 | 7140 | 7140 | 7140 |
| Decade 5 | 555 | 7140 | 7140 | | 7140 | | | 7140 | 882 | 7140 | | 7140 | 7140 | 7140 | 7140 |
| Roadless | | | | | | | | | | | | | | | |
| Decade 1 | 6585 | | | | | | | | 6258 | | | | | | 6258 |
| Decade 5 | 6585 | | | | | | | | 6258 | | | | | | 6258 |
| Wilderness | | | | 7140 | | 7140 | 7140 | | | | 7140 | | | | |

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Lone Butte is allocated to wilderness in Alternatives 4, 5A, 5B, and 6B. All of the adjusted net acres (7,140) are allocated to wilderness in these alternatives.

Wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to non-use. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Depending on future mineral activity, wildlife habitat would otherwise probably not be significantly affected under a wilderness prescription since domestic livestock grazing would continue. Wildlife habitat value would improve if grazing was substantially reduced. Disturbance of wildlife due to human activity would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change through natural ecological succession as affected by livestock grazing and fire management.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

A wilderness management prescription would significantly affect the future minerals management program on the area. If existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would improve, and the overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Lone Butte would increase.
- Soil, air and water qualities would improve from the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Lone Butte is very high and the loss of these revenues could be high, both from leasing and future production. A wilderness prescription would also increase the costs of range management; specifically, maintenance of range improvements, since motorized vehicles and equipment could not be used.

Social effects would be minimal since other resource values would be protected and activities such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness

Management Prescription:

Range/Wildlife/Minerals

Lone Butte is partially allocated to this prescription in Alternatives 2, 3, 5, 5c, 6a, 7, 7a, 7b, 8, and 9. Acreage in Lone Butte that is allocated to this prescription varies from 4,425 acres (62 percent) in Alternatives 7, 7a, and 7b to the entire area in Alternative 8. The average acreage in all the alternatives is approximately 80 percent.

The theme of this management prescription would be to maintain existing wildlife habitat values while also managing for the commodity products of livestock grazing and minerals production.

Under this management prescription the wilderness and roadless character of a major part of the area would be irretrievably forgone.

No suitable timber exists in the Lone Butte area. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production at or slightly above current levels while implementing intensive grazing systems in order to improve livestock distribution and overall forage utilization. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories, and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at or below current levels. Hardwood draw habitats and general ground cover would be expected to remain at current

levels. Structural range improvements would be emphasized over nonstructural.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values.

Some semi-primitive, non-motorized recreation opportunities would be available. However, as the area became developed, the recreation opportunity setting would tend to change to roaded natural appearing. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease as the area became developed.

Nonpriced values would be affected as follows:

- Existing visual quality would be decreased.
- Security for big game, upland game birds and raptors would decrease.
- Soil, air and water qualities would decline slightly due to development activities within a major portion of the area.
- The wilderness and roadless character of the area would be forgone by the second period.

Economic effects would be minimal since most activities would occur at or near current levels.

3. Designation: Nonwilderness Management Prescription: Range/Wildlife/Minerals/Roadless

The major portion of the Lone Butte Area (6,585 acres or 92 percent) is allocated to this prescription in Alternative 1. In addition this prescription is utilized in Alternatives 6 (6,258 or 88 percent) and 10 (the Proposed Action). None of the other alternatives utilizes this management prescription.

This management prescription would essentially maintain the current management strategy for this portion of the roadless area. The range, wildlife, and roadless values would remain the most important considerations.

No suitable timber exists in the Lone Butte Area. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at or below current levels. This

would have some minor effects on the wilderness character of the area because of the construction of some range improvements. However, this should not preclude a wilderness designation at some later date.

The wildlife management program would include wildlife surveys, habitat improvement, and mitigating other resource impacts on wildlife. Wildlife goals would be to maintain or improve the habitat for deer, antelope, and grouse. This would impact the range management goals to a degree in that forage needs for wildlife must be recognized. Wildlife management goals would have no effect on wilderness/roadless attributes of the area.

This prescription would significantly affect the mineral management program. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new exploratory drilling would be allowed on Federal minerals.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained.
- Security for big game, upland game and nongame wildlife would remain the same. Soil, air and water quality would improve due to improved range management practices.
- The wilderness resource would remain basically intact unless development occurred on outstanding minerals.
- The recreation opportunity setting would remain as semi-primitive, non-motorized.

The economic and social effects would be somewhat significant. More intensive range management would be more costly to the livestock producers. Motorized equipment could be used to construct and maintain range improvements as long as roads were not constructed. The loss of potential oil and gas revenues from leasing and production due to no surface occupancy stipulations could represent a significant economic loss.

4. Designation: Nonwilderness Management Prescription: Minerals

The Lone Butte area is partially allocated to this prescription under Alternatives 3 (357 acres), 5

(357 acres), and 5c (3,576 acres). None of the other alternatives utilize this management prescription.

This management prescription would emphasize the production of commodity products, namely minerals (oil and gas). It is recognized that a loss of other resource outputs may occur.

Some short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Lone Butte area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher.

This prescription would result in the development and roading of the area allocated to this management strategy. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of that portion of the area as wilderness.

Disturbance of wildlife due to human activity of wildlife and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, and powerlines would be constructed where needed in order to expedite production.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would degrade in these areas.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Disturbance of wildlife due to human activity of wildlife would increase as additional roads are constructed.
- The quality of hunting and other primitive recreation opportunities would decrease greatly.
- The recreation opportunity setting would change from semi-primitive, non-motorized to roaded natural appearing.
- The wilderness attributes would be irretrievably lost on that portion of the area.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments. Social effects would center mainly on local ranchers due to less suitable acreage for grazing, less AUM's, and reductions and/or changes in the size of their operations.

5. Designation: Nonwilderness Management Prescription: Wildlife

Lone Butte is partially allocated to this prescription under Alternatives 1, 6, 6A, 9, and 10 (the Proposed Action). A maximum of 30 percent of the acreage in Lone Butte is allocated under any one alternative.

This level of management emphasizes wildlife outputs while recognizing the importance of the production of some traditional outputs such as livestock grazing and minerals production.

Livestock grazing would continue but the management practices associated with this resource would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not to increase livestock numbers. Critical areas such as hardwood draws would be managed to optimize wildlife habitat values. Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife. In some areas livestock numbers would be reduced to meet wildlife management objectives.

The impacts of this management prescription to the wilderness attributes of the area could be substantial. Although stipulations would be applied to mineral leases to protect wildlife habitat, surface occupancy would be allowed. Roads and well pads would impact the wilderness quality of portions of the area precluding future wilderness classification.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted. Leases would contain no surface occupancy stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (calving and fawning areas, grouse dancing grounds). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off-years. Roads would be managed as necessary to protect wildlife values (i.e., road closures, limited access).

Nonpriced values would be affected as follows:

- Visual quality of the area would decrease slightly.
- Wildlife would be protected from human disturbance over a majority of the area.
- Soil, air, and water qualities would remain at or near current levels.
- The quality of hunting and primitive recreational activities would remain high.
- The wilderness attributes would be lost over a portion of the area.
- No additional acres would be added to the National Wilderness System.

The economic effects of this alternative will be slight. Livestock grazing could be reduced, but most likely will only be redistributed over the area. Oil and gas development will have numerous restrictions placed on it in wildlife areas, but these are not expected to significantly increase the cost of exploration.

Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

6. Designation: Nonwilderness
Management Prescription: Range

The Lone Butte area is partially allocated to this prescription under Alternatives 2 (2,546 acres), 7 (2,712 acres), 7a (2,715 acres) and 7b (2,715 acres).

This level of management would optimize domestic livestock grazing while recognizing the importance of traditional outputs such as wildlife habitat values and minerals outputs.

Intensive range management systems would be emphasized, including the use of structural and nonstructural improvements. Except to maintain minimum viable wildlife populations, all available forage would be allocated to livestock in these areas and AUM's would be increased accordingly.

The quality and quantity of wildlife habitat would be reduced in areas managed under this prescription. Conflicts between wildlife and livestock would be settled in favor of wildlife only when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Wilderness characteristics would decline under this prescription but would not be irrevocably lost. The greatest impact on wilderness would be the structural range improvements, but nonstructural improvements such as fertilization would enhance vegetative growth and the overall natural appearance of the area. A range prescription would basically maintain this area in its natural state.

Nonpriced values would be affected as follows:

- Visual quality will degrade in these areas and the acres of EVC-4 (disturbed) will increase.
- The quality of primitive recreational activities, including hunting, will remain at or near current levels.
- Security of big game and upland game birds would remain at or near current levels.
- No additional acres would be added to the National Wilderness System.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would remain at or near current levels. The ranching community would benefit from increased production and profits, but not significantly. The costs of oil exploration would increase slightly in certain situations.

MAGPIE L1DBB

GROSS ACRES — 6,080

NET ACRES — 6,080

I. INTRODUCTION AND DESCRIPTION

The Magpie Roadless Area is located approximately 40 miles south and west of Watford City, North Dakota. Access is via State Highway 85, and then by County and Forest Service System roads.

The Magpie Roadless Area is located within the Little Missouri Badlands, a biogeographical sub-unit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of upland grasslands are interspersed between upland breaks. Elevation varies from 2,100 feet to 2,600 feet above sea level.

The rough broken terrain within the area has limited plant growth. On some of the nongrass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt brush, and greasewood. Many of the gulches and steep drainages on northfacing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama with little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffalo berry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others.

The Magpie area supports populations of mule deer, white-tailed deer, bighorn sheep, antelope, turkeys, and sharptail grouse. Although the wildlife habitats and species represented within the Magpie area are not unique within the Little Missouri National Grasslands, they are listed by the State of North Dakota as high interest species.

The Magpie area is located 12 miles south of the north unit of Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space gives the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, antelope, and grouse.

Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

Several old seismic trails are found within the unit and are used occasionally by local ranchers, hunters, and recreationists. In 1981, a dry oil and gas hole was drilled within Section 29 (T145N, R100W). The pad and access road have been reclaimed and are being revegetated to natural conditions.

Livestock developments (i.e., developed springs, fences, water wells, stock tanks, dugouts) detract from the natural setting, although some range improvements have been constructed to blend with the natural characteristics.

b. Natural Appearance

Overall, the roadless area retains a natural appearance representative of the rolling grasslands which are contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

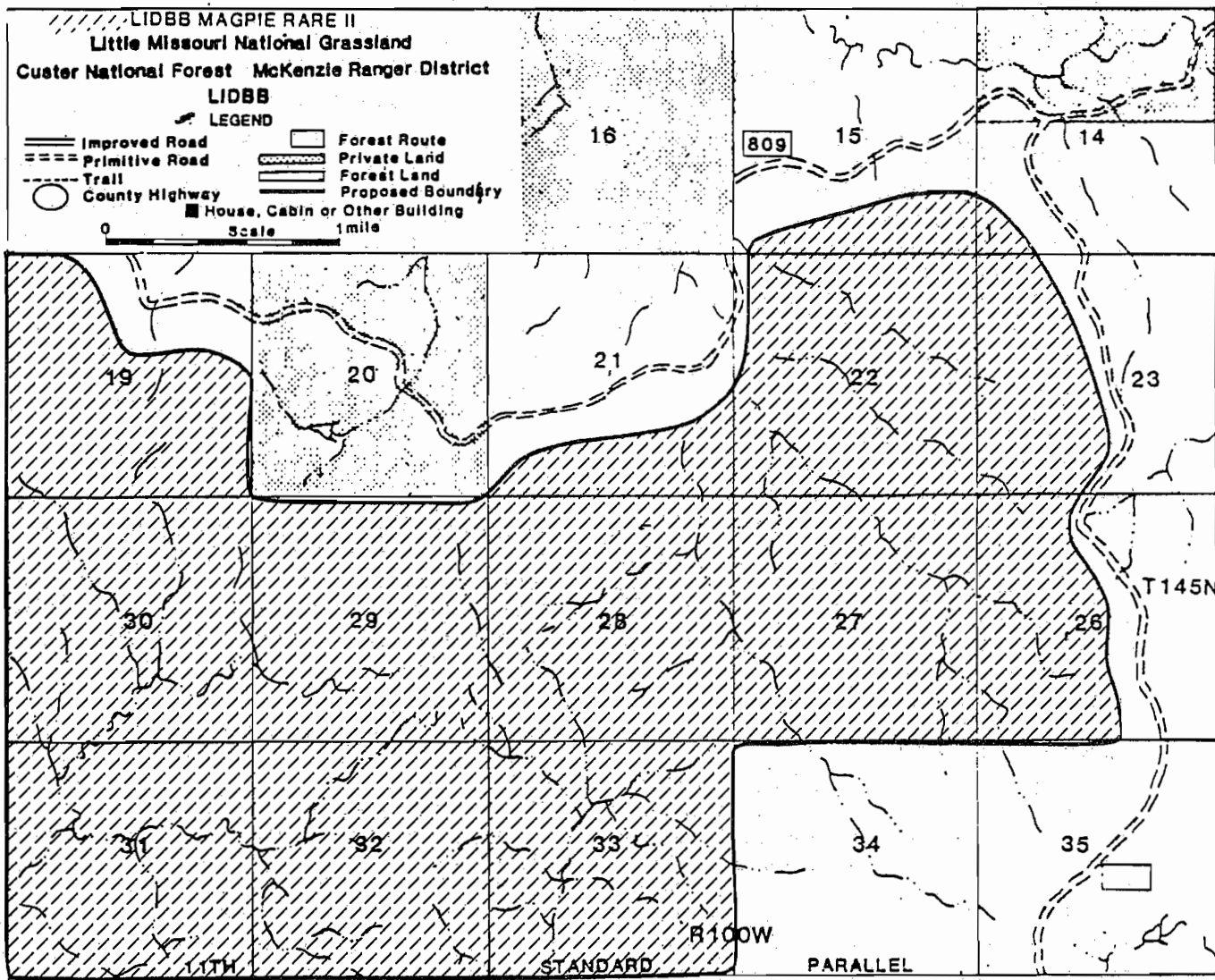
Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offer opportunity for isolation among the canyons. This is contrasted by the open spaces of the grasslands which offer about 2 miles of cross country travel in the eastern portion of the area.

d. Primitive Recreation Opportunities

There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially dangerous, are common inhabitants offering the challenge of coexistence. Hiking trails are non-existent.

e. Other Features

The area contains several archeological sites which represent prehistoric occupations and historical homestead sites.



Golden eagles are frequently seen and prairie falcons are occasionally observed within the area.

The Magpie area presents the opportunity to view and experience the badlands as they naturally exist.

2. Wilderness Manageability and Boundaries

The Magpie roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 37,240 | 34,960 | RARE II Inventory |
| - 31,160 | - 28,880 | Oil and gas development |
| 6,080 | 6,080 | 1983 Roadless Inventory |

The boundaries of the Magpie area are generally well defined. The north and east boundaries are generally set along Forest Service roads, and the south boundary is the McKenzie-Billings County line and is delineated by a fence. The western boundary follows section lines.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (of which the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness. The majority of the non-conforming activities within the area center around minerals and range management activities. Since the entire area is leased for oil and gas exploration, all management emphasis could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

There are no outstanding or reserved mineral rights within this roadless area.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-37
ROADLESS AREA RESOURCE SUMMARY
MAGPIE ROADLESS AREA

Area Description: L1DBB
Gross Acres: 6,080
Net Acres: 6,080

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 590 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 3,526 |
| Allotments | # of | 1 |
| AUM's | AUM's | 1,830 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 2 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 4,094 |
| Winter Habitat | Acres | 1,986 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 2,729 |
| Winter Habitat | Acres | 1,364 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 1,000 |
| Winter Habitat | Acres | 500 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 365 |
| Winter Habitat | Acres | 122 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | Unknown |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |

TABLE C-37
ROADLESS AREA RESOURCE SUMMARY
MAGPIE ROADLESS AREA

Area Description: L1DBB
 Gross Acres: 6,080
 Net Acres: 6,080

| Description | Units | Value |
|-----------------------|-------|-------|
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 6,080 |
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 6,080 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 52 |
| Leased Area | Acres | 6,080 |

The Magpie area contains significant habitat for mule deer, antelope, and bighorn sheep. The area provides approximately 3,729 acres of summer habitat and 1,864 acres of winter habitat for mule deer, 1,000 acres of summer habitat and 500 acres of winter habitat for antelope, and 365 acres of summer habitat and 122 acres of winter habitat for bighorn sheep. The area provides highly suitable habitat for cliff nesting, tree nesting, and ground nesting raptors. No known golden eagle nests have been identified within the area, although six nests occur within one-half mile of the unit. Wild turkeys and sharptailed grouse exist throughout the area as well as many nongame species.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 3,526 acres of the area and provides for 1,830 AUM's. There is one livestock range allotment within the roadless area. Range improvements include fences and stockwater developments.

The majority of the Magpie area is currently leased for oil and gas and is rated very high in potential for development of these resources. There are no acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the Plan. New leases were allowed to be issued for Federal

minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted.

At present, there are no producing oil wells within the roadless area. Development may occur by offset drilling from adjoining production units on the same or adjoining leases outside the roadless area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or nonproductive wells.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer, and antelope. It is estimated that the area produces 590 recreational visitor days with a capacity for 1,946. Other recreational use of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The potential for infestation of the area by noxious weeds (particularly leafy spurge), insects, and disease exists.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from population centers in Montana and South Dakota. It is approximately 150 miles west of Bismarck, North Dakota, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

**REGIONAL POPULATION CENTERS* AND
 PROXIMITY TO ROADLESS AREAS ON
 THE CUSTER NATIONAL FOREST**

| Population
Centers | Less Than
50 Miles | | 51-100 Miles | | 101-200
Miles | | 201-300
Miles | |
|-----------------------|-----------------------|-------|--------------|-------|------------------|--------|------------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is the Theodore Roosevelt Wilderness (National Park Service, USDI) located approximately 12 miles north of the planning area.

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the

Northern Great Plains, such as the Magpie area, have been designated.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 5 responses referred to the Magpie area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless.

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|---|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(areas) | Ashland
(areas) | Grasslands
(areas) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |
| Summary of Wilderness Opportunities and Proximity to Roadless Areas on the Custer National Forest | | | | | |
| | | | Beartooth | Ashland | Grasslands |
| Wilderness Within 100 Miles | | | | | |
| | No. of Areas | | 4 | 0 | 0 |
| | No. of Acres | | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | | | |
| | No. of Areas | | 3 | 5 | 1 |
| | No. of Acres | | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | | | |
| | No. of Areas | | 11 | 2 | 0 |
| | No. of Acres | | 5482381 | 584300 | 0 |

Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Ash Coulee Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These

commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

The following table describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness
Management Prescription: Wilderness

Magpie is allocated to wilderness in Alternatives 4, 5a (6,080 acres), and 7a (6,080 acres).

Wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to non-use. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Wildlife habitat would not be significantly affected under a wilderness prescription unless

TABLE C-38
MANAGEMENT EMPHASIS BY ALTERNATIVE
MAGPIE ROADLESS AREA L1DBB

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | | |
|---------------------------------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| | Alternative | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 | 9 PA 10 |
| Wilderness | | | | 6080 | | 6080 | | | | | | | 6080 | | | |
| Minimum Level (Roadless Mgmt.) | | | | | | | | | | | | | | | 3244 | |
| Minerals | | | | | | | 3092 | | | | | | | | | |
| Wildlife | 1702 | | | | | | 152 | | | | | | | | | |
| Range | | 2981 | | | | | | | | | | 3040 | | 3040 | | |
| Range/Wildlife/ | | | | | | | | | | | | | | | | |
| Minerals | | 3099 | 6080 | | 5928 | | 2836 | 5928 | 6080 | 201 | 5928 | 3040 | | 3040 | 2836 | 6080 6080 |
| Range/Wildlife/ | | | | | | | | | | | | | | | | |
| Minerals/Rdless | 4378 | | | | 152 | | | 152 | | 5879 | 152 | | | | | |
| Summary of Management Emphasis: | | | | | | | | | | | | | | | | |
| Roadless | | | | | | | | | | | | | | | | |
| Decade 1 | 1702 | 6080 | 6080 | | 5928 | | 6080 | 5928 | 6080 | 201 | 5928 | 6080 | | 6080 | 2836 | 6080 6080 |
| Decade 5 | 1702 | 6080 | 6080 | | 5928 | | 6080 | 5928 | 6080 | 201 | 5928 | 6080 | | 6080 | 2836 | 6080 6080 |
| Roadless | | | | | | | | | | | | | | | | |
| Decade 1 | 4378 | | | | 152 | | | 152 | | 5879 | 152 | | | | 3244 | |
| Decade 5 | 4378 | | | | 152 | | | 152 | | 5879 | 152 | | | | 3244 | |
| Wilderness | | | | 6080 | | 6080 | | | | | | | 6080 | | | |

domestic livestock grazing was drastically reduced. Disturbance of wildlife due to human activity would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change only through natural ecological succession as affected by grazing and fire management. Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

Oil and gas exploration would not be allowed and new leases would not be issued. There are no acres of outstanding mineral rights included in the adjusted net acres for Magpie; therefore, no conflict will occur.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would improve.
- Overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Magpie would increase.
- Soil, air and water qualities would improve from the reduction in development activities over the area.
- The recreation opportunity setting would remain as semi-primitive, non-motorized.

Economic effects would be significant. The potential for oil and gas resources in Magpie is very high and the loss of these revenues could be high, both from leasing and future production. A wilderness prescription would also increase the costs of range management; specifically, maintenance of range improvements, since motorized vehicles and equipment would be limited.

Social effects would be minimal since other resource values would be protected and activities

such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness
Management Prescription: Minimum Level

Alternative 8 allocates 3,244 acres to this prescription. Custodial or a minimum management level would be the theme of this allocation. The area would remain much as it is today, undeveloped and roadless. Management induced outputs would be reduced over time. There would be no new mineral leases issued and livestock grazing would be reduced over time. Wildlife habitat values and dispersed recreation would be left to occur naturally.

No new oil and gas leases would be issued and only minimal administration of existing developing sites would occur. The wilderness character of the area would remain intact.

The range management strategy that would develop would be season-long due to deterioration of range improvements. The Conservation Practices program would be implemented at a very low level. Bottoms, woody draws and riparian zones would be somewhat impacted even at a low level of grazing.

The wildlife management program would be eliminated. This would include wildlife surveys, habitat improvement, and habitat mitigation. Wildlife habitat within the woody draws and riparian zones would decline as livestock use would continue to occur.

Recreation would be allowed to occur. Off-road vehicle use could be expected to increase.

Soil erosion could be expected to remain at current levels.

Nonpriced values would be affected as follows:

- Visual quality would decline slightly.
- Soil and water quality would deteriorate within primary range.
- The quality of primitive recreational activities, including hunting, will decrease within riparian and hardwood draws.
- Wilderness characteristics within primary grazing areas would be reduced; however, the unit would basically be maintained in its unroaded state.
- The recreation opportunity setting would remain as semi-primitive, non-motorized.

The economic and social effects would be significant. The potential for oil and gas resources is high and the loss of these revenues from not issuing new leases could be high, both from leasing and future production. The reduction of livestock

grazing over time would affect traditional lifestyles in the area. Some livestock producers could be forced to find other sources of forage for their livestock.

3. Designation: Nonwilderness
Management Prescription:
Range/Wildlife/Minerals

Magpie is partially allocated to this prescription in every alternative except 1, 4, 5a and 7a. Acreages by alternative vary from 201 acres (3 percent) in Alternative 6a to 6,080 acres (100 percent) under Alternatives 3, 4, 6, 9 and 10 (the Proposed Action). Average acreage in all alternatives is approximately 72 percent. The objective of the allocation would be to emphasize these resource values through development and management of the area. Outputs may increase over time.

This management prescription would result in the development and roading of the area and hence would affect the wilderness character of the area. This prescription would preclude a future wilderness designation by the first decade.

No suitable timber exists in Magpie. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production near current levels while implementing intensive grazing systems in order to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories, and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. Hardwood draw habitats and general ground cover would be expected to improve. Structural range improvements would be emphasized over nonstructural.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease.

Nonpriced values would be affected as follows:

- Existing visual quality would be decreased as the area became developed.
- Security for big game, upland game birds and raptors would decrease.

- Soil and water qualities would decrease slightly due to development activities.
- Air quality would be reduced with increased oil and gas production.
- Wilderness values would be forgone and no additional acres would be added to the National Wilderness System.

There would be some minor economic and social effects. The development of the area for oil and gas would tend to increase local employment. The development of intensive livestock management systems would have some economic effects on the ranchers in that some additional investments would be required.

4. Designation: Nonwilderness
Management Prescription: Range/
Wildlife/Minerals/Roadless Management

Portions of the Magpie Area are allocated to the prescription in Alternatives 1, 5, 5c, 6a, and 6b. Alternatives 1 and 6a allocate 4,378 acres and 5,879 acres, respectively. The other three alternatives allocate insignificant acres (152) to this prescription. This management prescription would essentially maintain the current management strategy for this area. The range, wildlife, and roadless values would remain the most important management considerations.

This allocation would have some effect on the wilderness attributes of the area. Additional range improvement would have some minor impacts on the wilderness resource. The area would remain roadless, but oil and gas leases would be issued with no surface occupancy stipulations. Production would occur through such things as directional drilling. Although no acres would be added to the wilderness system, the wilderness resource would remain essentially intact.

No suitable timber exists in Magpie. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. Additional range improvements would impact the wilderness attributes of the area somewhat, but would not preclude a wilderness designation at some later point in time.

The wildlife management program would include wildlife surveys, habitat improvement, and mitigation of other resource impacts on wildlife.

Wildlife habitat within hardwood draws and primary grass range would be expected to improve because of intensive range management practices. Wildlife harassment and habitat displacement due to oil and gas development would not occur, as no new wildcat oil and gas exploration would be allowed.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new exploratory drilling would be allowed on Federal minerals.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained.
- Security for big game, upland game and nongame wildlife would remain the same.
- Soil, air and water quality would improve due to improved range management practices.
- Although no acres would be added to the National Wilderness System, the wilderness attributes of the area would remain intact.
- The recreation opportunity setting would remain as semi-primitive, non-motorized.

Allowing no surface occupancy would detract from future oil and gas revenues.

5. Designation: Nonwilderness Management Prescription: Minerals

Alternative 5b allocates 3,092 acres of the area to this prescription. This level of management optimizes mineral outputs in preference to other resource outputs but within legal requirements and administrative policies.

The theme of this management prescription would be to allow and encourage oil and gas production. It is recognized that a loss of other resource values may occur. These impacts to other resources and activities would be minimized because of preplanning of the oil and gas development, and planned mitigation measures. Rooding and development would result in at least portions of the area. These access roads may cross areas of other allocations or prescriptions in order to reach drill sites. The main roads would become part of the permanent Forest Transportation System with other roads closed and rehabilitated upon termination of the use.

This allocation would preclude any future wilderness designation on that portion of the area allocated to this prescription due to development and rooding.

Minor, short-term reductions in livestock grazing can be expected from development of oil and gas.

Disturbance of wildlife due to human activities of wildlife and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, and powerlines would be constructed where needed in order to expedite production.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would decrease in these areas.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Disturbance of wildlife would increase as additional roads are constructed.
- The quality of hunting and other primitive recreation opportunities would decrease.
- Wilderness characteristics would be foregone in and surrounding developed areas.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments. Social effects would center mainly on local ranchers due to less suitable acreage for grazing. For the most part, the adverse impacts of the mineral production should be short-term.

6. Designation: Nonwilderness Management Prescription: Wildlife

Magpie is partially allocated to this prescription under Alternatives 1 (1,702 acres) and 5b (152 acres). This level of management emphasizes wildlife management opportunities over other resource outputs.

Livestock grazing would continue but the management practices associated with this resource activity would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not necessarily to increase livestock numbers. Critical areas such as hardwood draws would be managed to optimize wildlife values and breaks ecosystems. AUM allocations would be based on utilization of key grass species, but without impacting wildlife needs. Range improvements would only be allowed where wildlife values were protected or enhanced. Conflicts with livestock would generally be settled in favor of wildlife. In general, range management activities would have little or no effect on the wilderness attributes of the area.

Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife. Improvement techniques such as burning, tree cutting, water developments and vegetative manipulation will be used to increase wildlife outputs wherever possible.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted. Leases would contain no surface occupancy

stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (i.e., calving and fawning areas, grouse dancing grounds). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off-years. Roads would be managed as necessary to protect wildlife values (i.e., road closures, limited access).

Nonpriced values would be affected as follows:

- Visual quality of the area would remain at or near current levels.
- Wildlife would be protected from disturbance.
- Soil, air, and water qualities would improve as range conditions improved.
- The quality of hunting and primitive recreational activities would remain high.
- Wilderness characteristics would be retained under this management prescription.
- Opportunities for primitive recreation and solitude would exist much as they are presently.

The economic effects of this alternative will be slight. Livestock grazing could be reduced, but most likely will only be redistributed over the area. Oil and gas development will have numerous restrictions placed on it in wildlife areas, but these are not expected to significantly increase the cost of exploration.

Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

7. Designation: Nonwilderness
Management Prescription: Range

Magpie is partially allocated to this prescription under Alternatives 2 (2,981 acres), 7 (3,040 acres), and 7b (3,040 acres). This level of management

would maximize livestock outputs in preference to other resource outputs, except to meet legal and administrative policies.

Intensive range management systems would be emphasized, including the use of structural and nonstructural improvements. All available forage would be allocated to livestock in these areas and AUM's would be increased accordingly. Although the addition of range improvements would adversely impact the visual resources of the area, it would not preclude a possible future wilderness classification for the area.

The quality and quantity of wildlife habitat would be reduced in areas managed under this prescription. Conflicts between wildlife and livestock would be settled in favor of wildlife only when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Nonpriced values would be affected as follows:

- Visual quality will degrade in these areas and the acres of EVC-4 (disturbed) will increase.
- The quality of primitive recreational activities including hunting will decrease.
- Security of big game and upland game birds would remain at or near current levels.
- Wilderness characteristics would decline under this prescription, but would not be irrevocably lost.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would increase. The ranching community would benefit from increased production and profits, but not significantly. The costs of oil exploration would increase slightly in certain situations.

STROM HANSON L1DBL

GROSS ACRES — 19,880

NET ACRES — 16,760

I. INTRODUCTION AND DESCRIPTION

The Strom Hanson Area is located approximately 30 miles southwest of Beach, North Dakota. Access is via Interstate 94 and State Highway 85, and then by County and Forest Service System roads.

The Strom Hanson roadless area is located within the Little Missouri Badlands, a biogeographical subunit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of upland grasslands are interspersed between upland breaks. Elevation varies from 2,600 feet along the Little Missouri River to 3,000 feet in the southeastern portion of the area.

The rough broken terrain within the area has limited plant growth. On some of the nongrass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt brush and greasewood. Many of the gulches and steep drainages on northfacing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass and blue grama, with little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffalo berry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others.

The alluvial floodplains support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive wheatgrass stands.

The Strom Hanson area supports viable populations of mule deer, white-tailed deer, antelope, bighorn sheep, turkeys, and sharptail grouse. Although the wildlife habitats and species represented within the Strom Hanson area are not unique within the Little Missouri National Grasslands, they are considered important to the State of North Dakota.

The Strom Hanson area is located 40 miles south of the Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, antelope, and grouse.

Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

Portions of the area were cultivated by homesteaders and reseeded with introduced grasses in the 1930's. A few old seismic tracts are used by local ranchers and recreationists.

Livestock developments (i.e., developed springs, fences, water wells, stock tanks, dugouts) detract from the natural setting, although most range improvements have been constructed to blend with the natural surroundings.

b. Natural Appearance

Overall, the roadless area retains a natural appearance representative of the rolling grasslands which are contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact, although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offer opportunity for isolation among the canyons. This is contrasted by the open spaces of the grasslands.

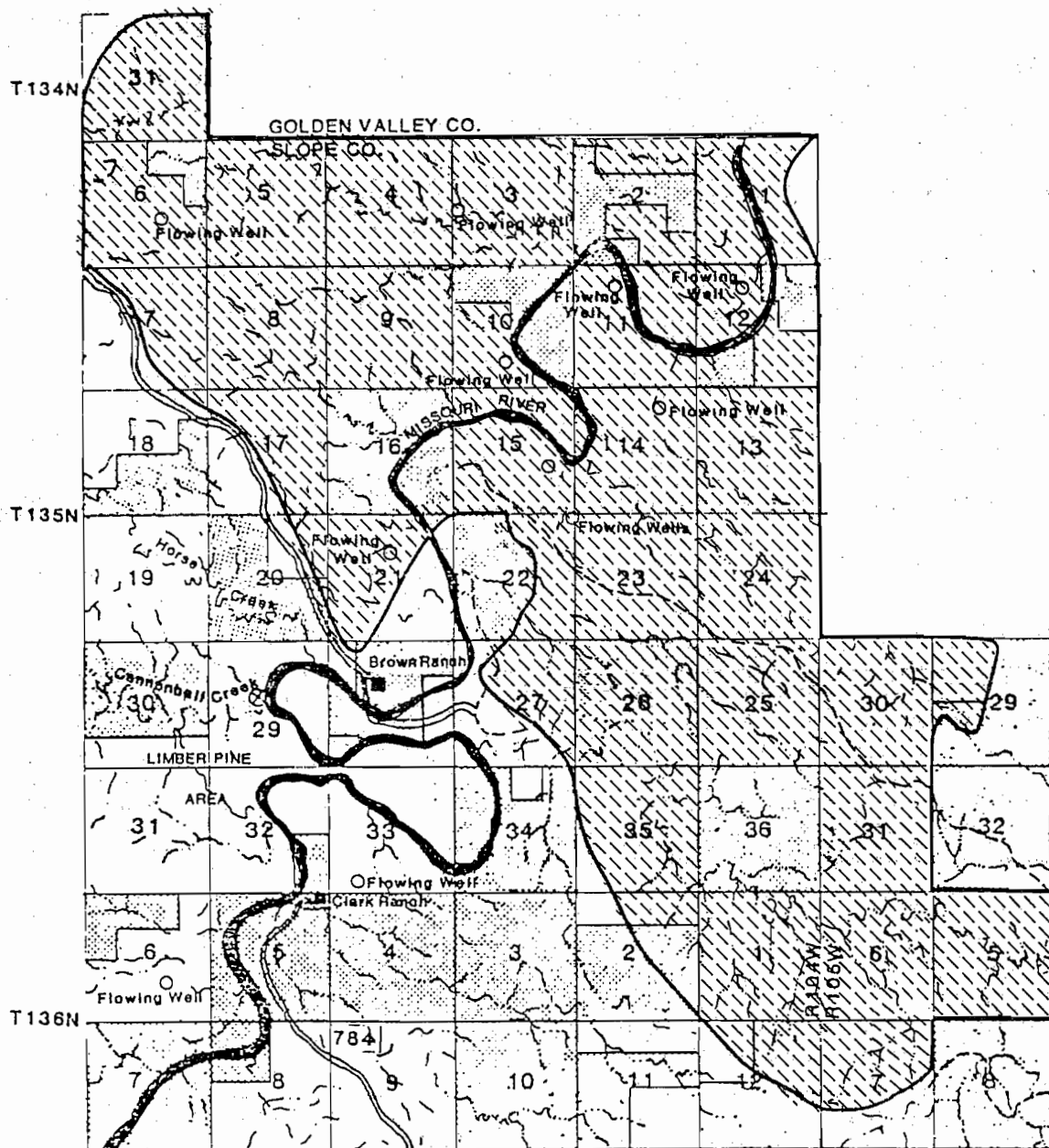
d. Primitive Recreation Opportunities

There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially dangerous, are common inhabitants offering the challenge of coexistence. Hiking trails are nonexistent.

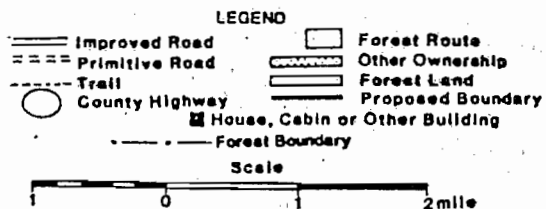
e. Other Features

The area contains several archeological sites which represent prehistoric occupations and historical homestead sites.

This area contains habitat for the black-footed ferret, an endangered species, since two prairie dog colonies have been identified in the area. The



LIDBL STROM HANSON RARE II
Custer National Forest McKenzie Ranger District



Strom Hanson area presents the opportunity to view and experience the badlands and rolling prairie as they naturally exist.

2. Wilderness Manageability and Boundaries

The Strom Hanson roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 18,440 | 15,320 | RARE II Inventory |
| + 1,440 | + 1,440 | Roadless lands added |
| 19,880 | 16,760 | 1983 Roadless Inventory |

The boundaries of the Strom Hanson area are generally well defined. The west and southwest are bounded by roads, and the north and east boundaries are defined by section lines. The section lines are not currently posted, but could be determined from GLO surveys. The general recreationist may not be able to define where portions of the Strom Hanson area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (of which the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness. The majority of the non-conforming activities within the area center around minerals and range management activities. Since the vast majority of the area (13,751 acres) is leased for oil and gas exploration, all management emphasis could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals located under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management

emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management. The Strom Hanson area contains 1,703 acres of outstanding mineral rights.

There are 1,703 acres of private or State lands scattered throughout the unit.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-39
ROADLESS AREA RESOURCE SUMMARY
STROM HANSON ROADLESS AREA

Area Description: L1DBL
Gross Acres: 19,880
Net Acres: 16,760

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 840 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 14,661 |
| Allotments | # of | 7 |
| AUM's | AUM's | 5,451 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 0 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 10,597 |
| Winter Habitat | Acres | 6,163 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 6,887 |
| Winter Habitat | Acres | 3,583 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 700 |
| Winter Habitat | Acres | 300 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 3,010 |
| Winter Habitat | Acres | 2,280 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |

| Description | Units | Value |
|-----------------------------|-------|---------|
| Black-Footed Ferret Habitat | Acres | Unknown |
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 16,760 |
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 16,760 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 16 |
| Leased Area | Acres | 13,751 |

The Strom Hanson area contains significant amounts of big game habitat for mule and white-tailed deer, pronghorn antelope, and bighorn sheep. It provides approximately 6,887 acres of summer habitat and 3,583 acres of winter habitat for deer; 3,010 acres of summer habitat and 2,200 acres of winter habitat for bighorn sheep; and 1,000 acres of summer and winter habitat for pronghorn antelope.

There are no known golden eagle nests in this area, but it is probable some exist since a complete survey has not been done. Much of the area provides suitable raptor nesting sites, but no sites have been identified at this time. Sage grouse are unique to this part of North Dakota and the Strom Hanson area, and grouse dancing grounds are common. Wild turkeys, sharptail grouse, and ring-necked pheasant exist throughout the area, as well as many nongame species such as songbirds. This area contains some potential habitat for the black-footed ferret (threatened and endangered species) since one prairie dog colony has been identified in it. There is no evidence of ferrets in or around this colony at the present.

No merchantable timber exists in this area except for post and pole material from some of the Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 14,661 acres of the area and provides for 5,451 AUM's. There are three livestock range allotments within the roadless area. Range improvements include fences and stockwater developments.

The majority of the Strom Hanson area is currently leased for oil and gas and is rated very high in potential for development of these resources.

In addition, there are 1,703 acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the Plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted.

At present, there are no producing oil wells within the roadless area. Development may occur by offset drilling from adjoining production units on the same or adjoining leases outside the roadless area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or nonproductive wells.

The 1,703 acres of outstanding minerals rights have been leased by the owner and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing well were drilled on State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area has high coal reserves and is rated moderate for potential coal development. The potential for hardrock, other than common varieties, is rated low.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer and antelope. It is estimated that the area produces 840 recreational visitor days with a capacity for 3,352. Other recreational use of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The potential for the infestation of this area by noxious weeds and insects exists.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from population centers in Montana and South Dakota. It is approximately 150 miles west of Bismarck, North Dakota, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is the Theodore Roosevelt Wilderness (National Park Service, USDI) located approximately 40 miles north of the planning area.

REGIONAL POPULATION CENTERS* AND PROXIMITY TO ROADLESS AREAS ON THE CUSTER NATIONAL FOREST

| Population Centers | Less Than 50 Miles | | 51-100 Miles | | 101-200 Miles | | 201-300 Miles | |
|--------------------|--------------------|-------|--------------|-------|---------------|--------|---------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plant or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Strom Hanson area, have been designated.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 10 responses referred to the Strom Hanson Area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless.

Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Ash Coulee Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in

North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-40 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness

Management Prescription: Wilderness

Strom Hanson is allocated to wilderness in Alternatives 4 (16,760 acres) and 7b (16,235 acres).

The wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to nonuse.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Depending on future mineral activity, wildlife habitat would otherwise probably not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the primary competition for forage. Disturbance of wildlife due to human activity would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats

CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|-----------------------------|---------------------------|---------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(areas) | Ashland
(areas) | Grasslands
(areas) |
| Selway-Bitterroot | Western Montana/ | 251443 | | | |
| | North-Central Idaho | 1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |

**Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest**

| | Beartooth | Ashland | Grasslands |
|--|-----------|---------|------------|
| Wilderness Within 100 Miles | | | |
| No. of Areas | 4 | 0 | 0 |
| No. of Acres | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | |
| No. of Areas | 3 | 5 | 1 |
| No. of Acres | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | |
| No. of Areas | 11 | 2 | 0 |
| No. of Acres | 5482381 | 584300 | 0 |

TABLE C-40
MANAGEMENT EMPHASIS BY ALTERNATIVE
STROM HANSON ROADLESS AREA L1DBL

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | | | |
|--------------------------------------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|-------|-------|
| | Alternative | | | | | | | | | | | | | | | | PA 10 |
| Wilderness | | | | 16760 | | | | | | | | | | | | 16760 | |
| Minimum Level
(Roadless Mgmt.) | 1080 | | | | | | | | | | | | | | | | |
| Minerals | | 3454 | 6005 | | | 2552 | | | 1545 | 5000 | 5000 | 3454 | 3453 | | | 1545 | 1545 |
| Wildlife | 2552 | 811 | 811 | | | 812 | | | 7680 | 5225 | 5225 | 812 | 811 | | | 7680 | 7680 |
| Range | | 9941 | 7389 | | | | | | 5332 | 5332 | 5332 | 9941 | 9941 | | | 5332 | 5332 |
| Range/Wildlife/
Minerals | | 2554 | 2555 | | 16760 | 13396 | | | 2203 | 2203 | 2203 | 2253 | 2555 | | 16760 | 2203 | 2203 |
| Range/Wildlife/
Minerals/Roadless | 13128 | | | | | | 16760 | 16760 | | | | | | | | | |
| Summary of Management Emphasis | | | | | | | | | | | | | | | | | |
| Roaded | | | | | | | | | | | | | | | | | |
| Decade 1 | 2552 | 16760 | 16760 | | 16760 | 16760 | | | 16760 | 16760 | 16760 | 16760 | 16760 | | 16760 | 16760 | 16760 |
| Decade 5 | 2552 | 16760 | 16760 | | 16760 | 16760 | | | 16760 | 16760 | 16760 | 16760 | 16760 | | 16760 | 16760 | 16760 |
| Roadless | | | | | | | | | | | | | | | | | |
| Decade 1 | 14208 | | | | | | 16760 | 16760 | | | | | | | | | |
| Decade 5 | 14208 | | | | | | 16760 | 16760 | | | | | | | | | |
| Wilderness | | | | 16760 | | | | | | | | | | | 16760 | | |

would change through natural ecological succession as affected by livestock grazing.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

A wilderness prescription would affect the future minerals management program on the area. If existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would improve, and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.

- Security for big game, upland game birds and raptors in Strom Hanson would increase.
- Soil, air and water qualities would improve from the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Strom Hanson is very high and the loss of these revenues could be high, both from leasing and future production.

Social effects would be minimal since other resource values would be protected and activities such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness Management Prescription: Minimum Level

Alternative 1 designates 1,080 acres or 6 percent of the area to this prescription. This is an insignificant amount of the total area and none of the other alternatives utilize this prescription. The impacts and consequences in regards to minerals, range management or other resource outputs is inconsequential. Some minor adjustments in the area boundary could be made to maintain the roadless or wilderness character of the vast majority of the area and still maintain resource outputs.

3. Designation: Nonwilderness Management Prescription: Range/Wildlife/Minerals

Strom Hanson is partially designated to this pre-

scription in Alternatives 2 (2,554 acres), 3 (3,555 acres), 5 (16,760 acres), 5a (13,396 acres), 6 (2,203 acres), 6a (2,203 acres), 6b (2,203 acres), 7 (2,253), 7a (2,555 acres), 8 (16,760 acres), 9 (2,203 acres), and 10 (the Proposed Action) (2,203 acres).

The theme of this management prescription would be to maintain existing wildlife habitat values while also managing for the commodity products of livestock grazing and minerals production.

Under this management prescription the wilderness and roadless character of a major part of the area would be irretrievably forgone.

No suitable timber exists in Strom Hanson. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production at or slightly above current levels while implementing intensive grazing systems in order to improve livestock distribution and overall forage utilization. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories, and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels.

Structural range improvements would be emphasized over nonstructural. The implementation of this prescription would adversely affect the visual quality of the area and would result in the wilderness character being forgone by the second decade.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values.

Some semi-primitive, non-motorized recreation opportunities would be available. However, as the area became developed, the recreation opportunity setting would tend to change to roaded natural appearing. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease as the area became developed.

Nonpriced values would be affected as follows:

- Existing visual quality would be decreased as the area became developed.
- Security for big game, upland game birds and raptors would decrease.
- Soil, air and water qualities would decline slightly.
- No additional acres would be added to the National Wilderness System.

- The wilderness character on a majority of the area would be forgone.

Economic effects would be minimal since most activities would occur at or near current levels.

Social effects would be minimal under all alternatives.

4. Designation: Nonwilderness
Management Prescription: Range/
Wildlife/Minerals/Roadless

The Strom Hanson area is designated to this prescription in Alternatives 1 (13,128 acres) and 5b and 5c (16,760 acres).

This management prescription would essentially maintain the current management strategy for this portion of the roadless area. The range, wildlife, and roadless values would remain the most important considerations.

No suitable timber exists in Strom Hanson. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. This would have some minor effects on the wilderness character of the area because of the construction of some range improvements. However, this should not preclude a wilderness designation at some later date.

The wildlife management program would include wildlife surveys, habitat improvement, and mitigating other resource impacts on wildlife. Wildlife goals would be to maintain or improve the habitat for deer, antelope, and grouse. This would impact the range management goals to a degree in that forage needs for wildlife must be recognized. Wildlife management goals would have no effect on wilderness/roadless attributes of the area.

This prescription would significantly affect the mineral management program. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new

exploratory drilling would be allowed on Federal minerals.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained.
- Security for big game, upland game and nongame wildlife would remain the same—soil, air and water quality would improve due to improved range management practices.
- The wilderness resource would remain basically intact unless development occurred on outstanding/reserved mineral rights.
- The recreation opportunity setting would remain as semi-primitive, non-motorized.
- No additional acres would be added to the National Wilderness System.

Not allowing surface occupancy would detract from future oil and gas revenues.

5. Designation: Nonwilderness Management Prescription: Minerals

Strom Hanson is partially allocated to this prescription under Alternatives 2 (3,454 acres), 3 (6,005 acres), 5a (2,552 acres), 6 (1,545 acres), 6a, 6b (5,000 acres), 7, 7a (3,454 acres), and 9 (1,545 acres).

This management prescription would emphasize the production of commodity products, namely minerals (oil and gas). It is recognized that a loss of other resource outputs may occur.

Minor, short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Strom Hanson area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher.

This prescription would result in the development and roading of the area designated to this management strategy. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of that portion of the area as wilderness.

Disturbance of wildlife due to human activity and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, powerlines, etc., would be constructed where needed in order to expedite production.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would degrade in these areas.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).

- Harassment of wildlife would increase as additional roads are constructed.
- The quality of hunting and other primitive recreation opportunities would decrease significantly.
- Wilderness characteristics would be for-gone in and surrounding developed areas.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments. Social effects would center mainly on local ranchers due to less suitable acreage for grazing, less AUM's, and reductions and/or changes in the size of their operations.

6. Designation: Nonwilderness Management Prescription: Wildlife

Strom Hanson is partially designated to this prescription under Alternatives 1 (2,552 acres), 2, 3, 5a (812 acres), 6 (7,680 acres), 6a, 6b (4,225 acres), 7, 7a (812 acres) and 9 (1,545 acres).

This level of management emphasizes wildlife outputs while recognizing that a loss of other resource outputs would occur.

Livestock grazing would continue, but the management practices associated with this resource would probably change somewhat. Intensive management would be implemented primarily to benefit wildlife and not to increase livestock numbers.

Critical areas such as hardwood draws would be managed to optimize wildlife habitat values. Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife. In some areas livestock numbers would be reduced to meet wildlife management objectives.

The impacts of this management prescription to the wilderness attributes of the area could be substantial. Although stipulations would be applied to mineral leases to protect wildlife habitat, surface occupancy would be allowed. Roads and well pads would impact the wilderness quality of portions of the area precluding future wilderness classification.

Wildlife habitats would be inventoried to identify uses and opportunities to improve them for wildlife. Improvement techniques such as burning, tree cutting, water developments and vegetative manipulation will be used to increase wildlife outputs wherever possible.

Minerals development would only be allowed outside of key habitat areas and only to the extent wildlife values were not substantially impacted. Leases would contain no surface occupancy stipulations in riparian areas, hardwood draws, breaks ecosystems, slopes over 30 percent, and key wildlife habitat areas (i.e., calving and fawn-

ing areas, grouse dancing grounds). Timing of drilling will be controlled for wildlife needs and will be spaced over several years with minimal activity allowed in off-years. Roads would be managed as necessary to protect wildlife values (i.e., road closures, limited access, etc.)

Nonpriced values would be affected as follows:

- Visual quality of the area would decline slightly.
- Wildlife would be protected from human disturbance over a majority of the area—soil, air, and water qualities would remain at or near current levels.
- The quality of hunting and primitive recreational activities would remain high.
- The wilderness attributes would be lost over a portion of the area.
- No additional acres would be added to the National Wilderness System.

The economic affects of this alternative will be slight. Livestock grazing could be reduced, but most likely will only be redistributed over the area. Oil and gas development will have numerous restrictions placed on it in wildlife areas but these are not expected to significantly increase the cost of exploration.

Social effects would include an increase in both the flora and wildlife of the area. This would increase the opportunity and quality of recreational activities, including hunting.

7. Designation: Nonwilderness Management Prescription: Range

Strom Hanson is partially designated to this prescription under Alternatives 2 (9,941 acres), 3 (7,389 acres), 6, 6a and 6b (5,332 acres), 7, 7a (9,441 acres), 7b (525 acres) and 9 (5,332 acres).

This level of management would optimize livestock outputs in preference to other resource outputs, except to meet legal and administrative policies.

Intensive range management systems would be emphasized, including the use of structural and

nonstructural improvements. Except to maintain minimum viable wildlife populations, all available forage would be allocated to livestock in these areas and AUM's would be increased accordingly.

The quality and quantity of wildlife habitat would be reduced in areas managed under this prescription. Conflicts between wildlife and livestock would be settled in favor of wildlife only when threatened and endangered species were affected.

Oil and gas leases would contain stipulations to limit and/or prohibit surface occupancy on primary range in these areas.

Wilderness characteristics would decline under this prescription, but would not be irrevocably lost. The greatest impacts on the wilderness attributes would be the structural range improvements, but nonstructural improvements such as fertilization would enhance vegetative growth and the overall natural appearance of the area. A range prescription would basically maintain this area in its natural state.

Nonpriced values would be affected as follows:

- Visual quality would decline in these areas and the acres of EVC-4 (disturbed) would increase.
- The quality of primitive recreational activities, including hunting, will decrease.
- Security of big game and upland game birds would decrease.
- No additional acres would be added to the National Wilderness System.
- Wilderness characteristics would decline under this prescription but would not be irrevocably lost.

Economic and social effects would be minimal under this prescription. Livestock production would increase while wildlife outputs would increase. The ranching community would benefit from increased production and profits, but not significantly. The costs of oil exploration would increase slightly in certain situations.

TWIN BUTTES L1DAU

GROSS ACRES — 9,000

NET ACRES — 9,000

I. INTRODUCTION AND DESCRIPTION

The Twin Buttes Area is located approximately 45 miles west of Dickinson, North Dakota. Access is via Interstate 94 and State Highway 85, and then by County and Forest Service System roads.

The Twin Buttes roadless area is located within the Little Missouri Badlands, a biogeographical subunit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of rolling grasslands occur along western third of roadless area. Elevation varies from 2,400 feet to 2,900 feet above sea level.

The rough broken terrain within the area has limited plant growth. On some of the non-grass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, 4-wing salt brush, and greasewood. Many of the gulches, and steep drainages on northfacing slopes are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama, with little bluestem in the sandy areas and threadleaf sedge on the southern exposures. Understory shrub species in draws include buffalo berry, skunkbush sumac, chokecherry, snowberry, woods rose, and many others.

The alluvial floodplains along the lower reaches of Wannagen Creek support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive wheatgrass stands.

The Twin Buttes area supports viable populations of mule deer, antelope, and sharptail grouse. Although the wildlife habitats and species represented within the Twin Buttes Area are not unique within the Little Missouri National Grasslands, they are considered important to the State of North Dakota.

The Twin Buttes area is located 5 miles west of the Theodore Roosevelt National Park within the Little Missouri Badlands. The badlands are a unique entity to North Dakota. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness. Present recreational use is primarily during hunting season for deer, antelope, and grouse.

Other uses of the area are for livestock grazing and the production of oil and gas.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

The natural integrity of the original area has been largely preserved. Prior to acquiring this area, the land had been homesteaded and farmed. Introduced grasses were seeded following the dust bowl days and many stands are still healthy. In addition, the area has been extensively invaded by the noxious weed leafy spurge.

Livestock developments (i.e., fences, water wells, primitive trails, stock tanks, dugouts) detract from the natural setting although most range improvements have been constructed to blend with the natural characteristics.

b. Natural Appearance

Overall, the roadless area retains a natural appearance representative of the rolling grasslands which are contrasted by the rugged character of the badlands. The ecological processes of these ecosystems remain intact, although closer views of the area will reveal the mineral and grazing activities.

c. Solitude

Opportunities for experiences often unique to wilderness, i.e., solitude, serenity, and self-reliance, are available within this roadless area. The rugged terrain of the badlands offer opportunity for isolation among the canyons.

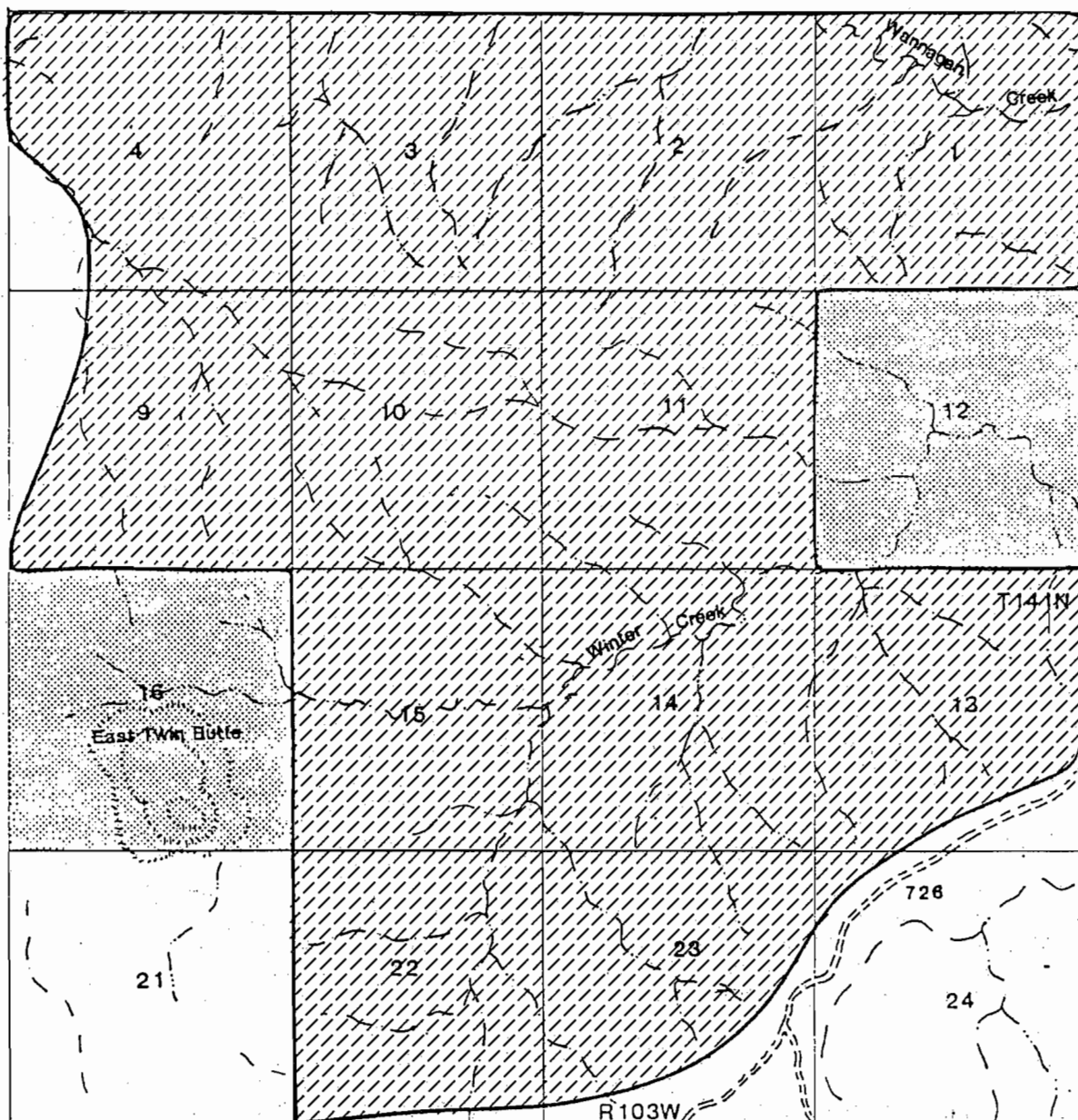
d. Primitive Recreation Opportunities

There is a moderate potential for primitive recreation opportunities within this roadless area. Challenge in the grasslands centers around survival in a dry, harsh environment. Summer temperatures may reach over 100 degrees and the area contains few watering sites. Prairie rattlers, potentially dangerous, are common inhabitants offering the challenge of coexistence. Hiking trails are nonexistent.

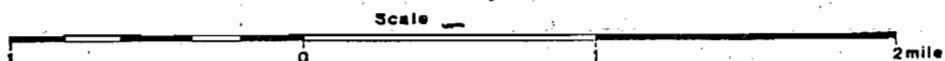
e. Other Features

An internationally significant paleontological site is located along the area's southeastern boundary. The site has been excavated over the past 12 years and has yielded information to reconstruct life within a period during the paleocene epoch.

The area contains several archeological sites which represent prehistoric occupations as well as historical homestead sites. The Twin Buttes area presents the opportunity to view and experience the badlands as they naturally exist.



LIDAU TWIN BUTTES RARE II
Custer National Forest McKenzie Ranger District



2. Wilderness Manageability and Boundaries

The Twin Buttes roadless area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 11,880 | 9,600 | RARE II Inventory |
| - 2,880 | - 600 | Oil and gas development |
| 9,000 | 9,000 | 1983 Roadless Inventory |

The boundaries of the Twin Buttes area are generally well defined, primarily following land survey lines on the north, west, and south, and Forest roads on the east. The section lines are not currently posted, but could be determined from GLO surveys. The general recreationist may not be able to define where portions of the Twin Buttes area boundary exist except by use of delineated maps.

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (of which the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness. The majority of the non-conforming activities within the area center around minerals and range management activities. Since the entire area is leased for oil and gas exploration, all management emphases could be affected by oil and gas activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals located under Federal surface ownership) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. The decision to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management. Twin

Buttes contains 640 acres of outstanding mineral rights. Currently there are no producing oil wells within the area.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-41
ROADLESS AREA RESOURCE SUMMARY
TWIN BUTTES ROADLESS AREA

Area Description: L1DAU
Gross Acres: 9,000
Net Acres: 9,000

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 575 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 5,285 |
| Allotments | # of | 4 |
| AUM's | AUM's | 2,427 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 0 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 5,970 |
| Winter Habitat | Acres | 3,030 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 4,513 |
| Winter Habitat | Acres | 2,057 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 1,457 |
| Winter Habitat | Acres | 973 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | 0 |

| Description | Units | Value |
|-----------------------|-------|-------|
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 9,000 |
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 9,000 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 16 |
| Leased Area | Acres | 9,000 |

The Twin Buttes area contains significant amounts of habitat for mule deer and antelope. The area provides approximately 4,513 acres of summer habitat and 2,057 acres of winter habitat for mule deer, and 1,457 acres of summer habitat and 973 acres of winter habitat for antelope. There are two known golden eagle nests located within the area; however, it is probable that more exist since a complete survey has not been conducted. The area supports other raptors such as the red-tailed hawk, marsh hawk, the great horned owl, and American kestrel. Wild turkeys and sharptailed grouse exist throughout the area as well as many nongame species.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 5,285 acres of the area and provides for 2,247 AUM's. There are four livestock range allotments within the roadless area. Range improvements include fences and stockwater developments.

The entire Twin Buttes area is currently leased for oil and gas and is rated very high in potential for development of these resources. In addition, there are 640 acres of outstanding mineral rights within the area.

This roadless area has been managed with the objective of continuing the undeveloped and open space character of the area through the current Badlands Land Management Plan. However, existing mineral leases were honored by the Plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted.

At present, there are no producing oil wells within the roadless area. Development may occur by offset drilling from adjoining production units on the same or adjoining leases outside the area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or non-productive wells.

The 640 acres of outstanding minerals rights have been leased by the owner and access would legally have to be provided in the event the lessee decided to explore and develop. If a producing well were drilled on State or privately owned minerals, then the BLM would have to make a determination as to whether the Federal mineral estate would be protected from drainage. The area has high coal reserves and is rated moderate to high for potential coal development. The potential for hardrock, other than common varieties, is rated low.

The majority of recreational use occurs during hunting season for sharptail grouse, mule deer and antelope. It is estimated that the area produces 575 recreation visitor days with a capacity for 1,483. Other recreational use of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

Management of fire in this area is not expected to create problems. The terraces associated with the major drainages are supporting communities of the noxious weed leafy spurge.

D. Need

1. Proximity to Designated Wilderness and to Population Centers

This roadless area is more than a two-hour drive from population centers in Montana, and South Dakota. It is approximately 150 miles west of Bismarck, North Dakota, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness area is the Theodore Roosevelt Wilderness located approximately 5 miles east of the planning area.

**REGIONAL POPULATION CENTERS* AND
PROXIMITY TO ROADLESS AREAS ON
THE CUSTER NATIONAL FOREST**

| Population
Centers | Less Than
50 Miles | | 51-100 Miles | | 101-200
Miles | | 201-300
Miles | |
|-----------------------|-----------------------|-------|--------------|-------|------------------|--------|------------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

**CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST**

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|-----------------------------|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(areas) | Ashland
(areas) | Grasslands
(areas) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |

Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest

| | Beartooth | Ashland | Grasslands |
|---------------------------------|-----------|---------|------------|
| Wilderness Within 100 Miles | | | |
| No. of Areas | 4 | 0 | 0 |
| No. of Acres | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | |
| No. of Areas | 3 | 5 | 1 |
| No. of Acres | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | |
| No. of Areas | 11 | 2 | 0 |
| No. of Acres | 5482381 | 584300 | 0 |

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. However, very few areas representing ecosystems characteristic of the Northern Great Plains, such as the Twin Buttes area, have been designated.

F. Public Interest and Concerns

In September 1983, the public was asked to comment on roadless areas; specifically, on the 1983 adjusted roadless inventory and on people's interest in the area. Of the 57 responses received, 8 responses referred to the Twin Buttes area specifically. Interests expressed about this area focused on roadless management for the security of wildlife as well as maintaining a natural environment for hunters and other outdoor recreationists. Contrasting this, the concern for oil and gas development did not support retaining the area as roadless.

Through the development of the Badlands Land Management Plan, most local people expressed opposition to formal classification of the area. This expression was supported in the 1979 RARE II process through the Governor's recommendation that no areas in North Dakota be recommended for wilderness.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Ash Coulee Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individuals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that develop-

ment was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-42 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness
Management Prescription: Wilderness

Twin Buttes is designated to wilderness in Alternatives 1 (9,000 acres), 4 (9,000 acres), 5c (9,000 acres), 6a (9,000 acres) and 8 (9,000 acres).

A wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to nonuse. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Depending on future mineral activity, wildlife habitat would otherwise probably not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the primary competition for forage.

Disturbance of wildlife due to human activity would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change through natural ecological succession as affected by livestock grazing.

Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place and could be replaced if necessary to properly administer the grazing program.

A wilderness prescription could affect the future minerals management program on the area. If

TABLE C-42
MANAGEMENT EMPHASIS BY ALTERNATIVE
TWIN BUTTES ROADLESS AREA L1DAU

| Management
Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | | | |
|--------------------------------------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 | 9 | PA 10 |
| Wilderness | 9000 | | | 9000 | | | | 9000 | | 9000 | | | | | 9000 | | |
| Range/Wilderness/
Minerals | | | 9000 | | | | | | | | | | 9000 | 9000 | | 9000 | |
| Range/Wildlife/
Minerals/Roadless | | 9000 | | | 9000 | 9000 | 9000 | | 9000 | | 9000 | 9000 | | | | | 9000 |
| Summary of Management Emphasis | | | | | | | | | | | | | | | | | |
| Roaded | | | | | | | | | | | | | | | | | |
| Decade 1 | | | 9000 | | | | | | 9000 | | 9000 | 9000 | 9000 | 9000 | | 9000 | |
| Decade 5 | | | 9000 | | | | | | 9000 | | 9000 | 9000 | 9000 | 9000 | | 9000 | |
| Roadless | | | | | | | | | | | | | | | | | |
| Decade 1 | | 9000 | | | 9000 | 9000 | 9000 | | | | | | | | | | 9000 |
| Decade 5 | | 9000 | | | 9000 | 9000 | 9000 | | | | | | | | | | 9000 |
| Wilderness | 9000 | | | 9000 | | | | 9000 | | 9000 | | | | | 9000 | | |

existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would improve, and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Twin Buttes would increase.
- Soil, air and water qualities would improve from the reduction in activities over the area.

Economic effects would be significant. The potential for oil and gas resources in Twin Buttes is very high and the loss of these revenues could be high, both from leasing and future production.

Social effects would be minimal since other resource values would be protected and activities such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness
Management Prescription:
Range/Wildlife/Minerals

Twin Buttes is designated to this prescription in Alternatives 3 (9,000 acres), 7a, 7b and 9 (9,000 acres).

The theme of this management prescription would be to maintain existing wildlife habitat values while also managing for the commodity

products of livestock grazing and minerals production. Under this management prescription the wilderness and roadless character of a major part of the area would be foregone. No suitable timber exists in Twin Buttes. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production at or slightly above current levels while implementing intensive grazing systems in order to improve livestock distribution and overall forage utilization. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories, and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at or below current levels. Hardwood draw habitats and general ground cover would be expected to remain at current levels. Structural range improvements would be emphasized over nonstructural improvements.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease.

Nonpriced values would be affected as follows:

- Existing visual quality would decline as the area becomes more developed.
- Security for big game, upland game birds and raptors would decline slightly.

- Soil, air and water qualities would remain at current levels.
- No acres would be added to the National Wilderness System and the wilderness attributes on portions of the area would be forgone.
- Opportunities for semi-primitive, non-motorized recreation would decline.

Economic effects would be minimal since most activities would occur at or near current levels.

3. Designation: Nonwilderness
Management Prescription: Range/
Wildlife/Minerals/Roadless

Twin Buttes is designated to this prescription in Alternatives 2, 5, 5a, 5b, 6, 6b, 7 and 10 (the Proposed Action).

This management prescription would essentially maintain the current management strategy for this roadless area. The range, wildlife, and roadless values would remain the most important considerations.

No suitable timber exists in Twin Buttes. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. This would have some minor effects on the wilderness character of the area because of the construction of some range improvements. However, this should not preclude a wilderness designation at some later date.

The wildlife management program would include wildlife surveys, habitat improvement, and mitigation of other resource impacts on wildlife. Wildlife habitat within hardwood draws and primary grass range would be expected to improve because of intensive range management practices. Disturbance of wildlife due to human activity and habitat displacement due to oil and gas development would not occur, as no new wildcat oil and gas

exploration would be allowed. Wildlife goals would be to maintain or improve the habitat for deer, antelope, and grouse. This would impact the range management goals to a degree in that forage needs for wildlife must be recognized. Wildlife management goals would have no effect on the wilderness/roadless attributes of the area.

This prescription would significantly affect the mineral management program. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new exploratory drilling would be allowed on Federal minerals.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained.
- Security for big game, upland game and nongame wildlife would remain the same—soil, air and water quality would improve due to improved range management practices.
- The wilderness resource would remain basically intact unless development occurred on outstanding minerals.
- The recreation opportunity setting would remain as semi-primitive, non-motorized.
- No acres would be added to the National Wilderness System.

The economic and social effects would be somewhat significant. More intensive range management would be more costly to the livestock producers. Motorized equipment could be used to construct and maintain range improvement as long as roads were not constructed. The loss of potential oil and gas revenues from leasing and production due to no surface occupancy stipulations could represent a significant economic loss.

WANNAGAN L1DBE

GROSS ACRES — 6,280

NET ACRES — 5,040

I. INTRODUCTION AND DESCRIPTION

The Wannagan area is located approximately 40 miles west of Dickinson, North Dakota. Access is via Interstate 94 and then by County and Forest Service System roads. The area is bounded by the Theodore Roosevelt National Park and private land to the east, Wannagan Road (FDR 726) to the west, a township boundary to the north, and Knutson Creek Road (LFDR 730) to the south.

The Wannagan Roadless Area is located within the Little Missouri Badlands, a biogeographical subunit of the Great Plains Region. Topography of the area varies from gentle rolling grasslands to extremely rugged "badlands" terrain with deeply incised stream channels and numerous clay buttes. Extensive areas of upland grasslands are interspersed between upland breaks, particularly in the north and west side of the unit.

Elevation varies from 2,600 feet along portions of the area adjoining the Theodore Roosevelt National Park to 2,200 feet along the Little Missouri River.

The rough broken terrain within the area has limited plant growth. On some of the non-grass areas, predominate vegetation consists of big sagebrush, rubber rabbit brush, four-wing salt brush and greasewood. Many of the gulches and steep drainages on north-facing slopes, are occupied by a dense growth of Rocky Mountain juniper. Green ash and American elm occupy the wooded draws. Dominant grasses include western wheatgrass, green needle grass, and blue grama with little bluestem in the sandy areas.

The alluvial floodplains along Wannagan Creek support a riparian community consisting of cottonwoods and associated species. The terraces immediately above the floodplain tend to support silver sage and extensive wheatgrass stands.

The Wannagan area supports viable populations of mule deer, white-tailed deer, antelope, turkeys, and sharptail grouse. A potential bighorn sheep transplant site has been identified within the area. Although the wildlife habitats and species represented within the Wannagan area are not unique within the Little Missouri National Grasslands, they are considered important to the State of North Dakota.

The Wannagan area adjoins a portion of the Theodore Roosevelt National Park which has been officially classified as wilderness by Congress. Consequently, the essentially roadless character of the Wannagan Area serves as a buffer to the Wilderness and Park.

The badlands are a unique entity to North Dakota. No where else in the state does the specific combination of factors exist that make the badlands so prized. The combination of rugged terrain and open space give the badlands a unique scenic attractiveness.

II. ANALYSIS OF WILDERNESS SUITABILITY

A. Wilderness Capability

1. Wilderness Characteristics

a. Natural Integrity

There are some intrusions into the roadless area resulting from wildcat exploration. This activity occurred prior to surface occupancy cut-off dates, which would have precluded such exploration, once in effect. At present there are two producing wells from which offset drilling could occur.

There is approximately one mile of Forest Service System road within the Wannagan area. In addition, there is a primitive two-track road system used by cattlemen for their livestock operations.

b. Natural Appearance

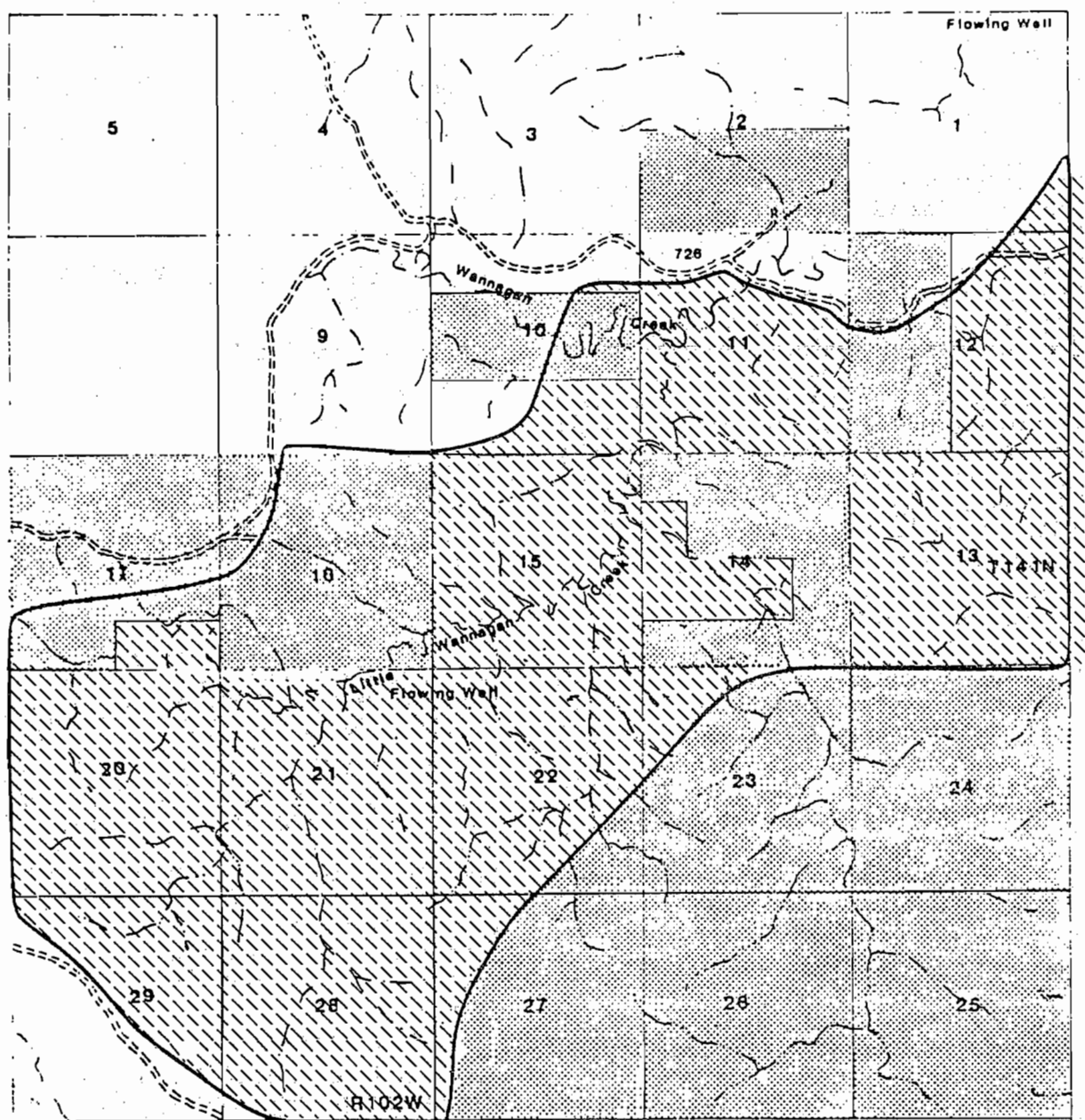
Overall, the roadless area retains a natural appearance, reflecting the undeveloped character of the area. However, as previously discussed, there are areas of limited disturbance associated with oil and gas activity. Furthermore, there are some livestock developments (i.e., developed springs, fences, water wells, primitive trails, stock tanks, dugouts) which may detract from the natural setting.

c. Solitude

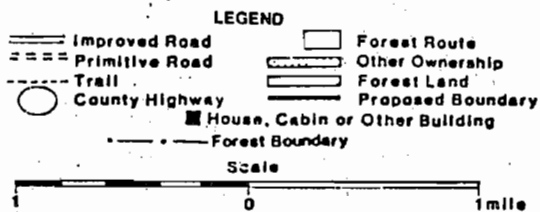
Traffic on Forest Service System roads, oil well facilities, and possibly some range developments may detract from the solitude. However, opportunities for solitude do exist within the interior of the roadless area and adjacent to the National Park.

d. Primitive Recreation Opportunities

There is currently light use with moderate potential for primitive recreation opportunities within this roadless area. Since there are no designated hiking trails and remoteness, the area receives only moderate use from recreationists. The Wannagan Roadless Area presents the opportunity to view and experience the badlands as they naturally exist.



LIDBE WANNAGAN RARE II
Custer National Forest McKenzie Ranger District



| Description | Units | Value |
|-----------------------|-------|-------|
| Significant Fisheries | | |
| Stream Miles | Miles | 0 |
| Stream Habitat | Acres | 0 |
| Lakes | # of | 0 |
| Lake Habitat | Acres | 0 |
| Water Developments | | |
| Existing | # of | 0 |
| Minerals | | |
| Hardrock Potential | | |
| Very High | Acres | 0 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 5,040 |
| Mining Claims | # of | 0 |
| Oil and Gas Potential | | |
| Very High | Acres | 5,040 |
| High | Acres | 0 |
| Moderate | Acres | 0 |
| Low | Acres | 0 |
| Oil and Gas Leases | | |
| Leases | # of | 12 |
| Leased Area | Acres | 5,040 |

The Wannagan area contains significant amounts of habitat for deer and bighorn sheep. The area provides approximately 1,650 acres of summer habitat and 640 acres of winter habitat for mule deer, and 800 acres of summer habitat and 650 acres of winter habitat for bighorn sheep. The area provides approximately 800 acres of summer habitat and 650 acres of winter habitat for antelope. There is one known golden eagle nest located within the area; however, it is probable that more exist since a complete survey has not been conducted. The area supports other raptors such as the red-tailed hawk, marsh hawk, great horned owl, and American kestrel. Wild turkeys and sharp-tail grouse exist throughout the area as well as many nongame species.

No merchantable timber exists in this area except for post and pole material from some stands of Rocky Mountain juniper.

Forage production for livestock is rated as suitable on 4,275 acres of the area and provides for 1,816 AUM's. There are six livestock range allotments within the roadless area. Range improvements include fences, water pipelines, springs, stock tanks, and dams.

The entire Wannagan area is currently leased for oil and gas and is rated very high in potential for development of these resources.

This roadless area was established with the objective of continuing the undeveloped and open space character of the area. However, existing mineral leases were honored by the land management plan. New leases were allowed to be issued for Federal minerals with a stipulation that surface development must occur prior to December 31, 1981, the expiration date of the latest expiring lease existing at the time the Badlands Land Management Plan was adopted.

At present there are two producing oil wells within the roadless area. Development may continue by offset drilling on adjoining production units on the same or adjoining leases within the area. Offset drilling will be allowed until the limits of the "discovery" pool are defined through dry or non-productive wells.

There have been recent "discoveries" as a result of wildcat exploration on the southern edge of the roadless area. There are approximately 1,480 acres of private or State owned minerals which exist within the Wannagan Area. These acres have been leased and access would legally have to be provided in the event the lessee decided to drill. If a producing well were drilled on State or privately owned lands, then the BLM would have to make a decision as to whether the Federal mineral estate would be protected from drainage. The area is rated moderate for potential coal development and low for hardrock potential.

The majority of recreational use occurs during hunting season for upland birds, mule deer and antelope. It is estimated that the area produces 682 recreation visitor days with a capacity for 1,700. Other recreational use of the area such as hiking, horseback riding, and sightseeing are currently low.

This area contains several identified prehistoric sites and it is expected that more sites would be located and recorded as inventories are completed throughout the remainder of the area.

C. Management Considerations

The most important management considerations are the oil and gas leases, existing wells and the potential for offset drilling on adjoining production units and leases. In addition, drilling on State and privately owned lands within the roadless area is legally permissible.

The terraces associated with the major drainages are supporting communities of the noxious weed leafy spurge.

D. Need

1. Proximity to Population Centers and Designated Wilderness

This roadless area is more than a two-hour drive from population centers in Montana and South Dakota. It is approximately 150 miles west of Bismarck, North Dakota, which is the largest town near the area.

The following data displays the proximity of roadless areas on the Custer National Forest to regional population centers.

Chart 1 displays regional wilderness opportunities and proximity to roadless areas on the Custer National Forest. The closest identified wilderness

e. Other Features

The east side of the roadless area adjoining the Theodore Roosevelt National Park includes approximately 400 acres of a petrified forest. The area also contains several archeological sites which represent prehistoric occupation.

2. Wilderness Manageability and Boundaries

The boundaries of the Wannagan area are generally well defined. The north boundary is defined by a section line separating townships. The east boundary is delineated by the Little Missouri River, the National Park boundary (both well defined) and a section line. The section lines are not currently posted. The general recreationist may not be able to define where portions of the Wannagan area boundary exist except by use of delineated maps.

The Wannagan Roadless Area was inventoried and evaluated in the 1979 RARE II (Roadless Area Review and Evaluation) process. The area was designated for nonwilderness uses. Changes in the acreage since 1979 are noted below.

| Gross Acres | Net Acres | |
|-------------|-----------|-------------------------|
| 7,480 | 5,880 | RARE II Inventory |
| - 1,200 | -840 | Oil and gas development |
| 6,280 | 5,040 | 1983 Roadless Inventory |

The National Grasslands were acquired in 1934 through the Bankhead-Jones Farm Tenant Act with the primary objective of livestock production. Differing from public domain lands (of which the National Forests are a part), acquired lands can contain a spectrum of encumbrances, some of which may not be compatible with wilderness. The majority of the non-conforming activities within the area center around minerals and range management activities. The wilderness or roadless resources could be irretrievably forgone if exploration and development occur. Stipulation requirements within leases do exist to mitigate impacts on the wilderness and roadless resources. Options to retain the wilderness characteristics in some or all of the wilderness management emphasis are:

- Honor the lease until expiration. If no discovery is made, then the area could be recommended for withdrawal. If production is established in or near the roadless area, then oil and gas development could preclude the retention of the wilderness characteristics in some or all of the area.
- Re-purchase of existing leases through Congressional initiative.
- Negotiate with the leaseholders to relinquish leases or accommodate the wilderness resource to the extent possible.

Outstanding or reserved mineral rights (private minerals located under Federal surface owner-

ship) are another overriding consideration which could affect the wilderness and roadless resources of the area regardless of the management emphasis. Decisions to enter and develop the area by the subsurface owners is a right not controlled by Forest Service management.

B. Resources

The discussion that follows refers to resources present within the roadless area other than the previously discussed wilderness resource.

TABLE C-43
ROADLESS AREA RESOURCE SUMMARY
WANNAGAN ROADLESS AREA

Area Description: L1DBE
Gross Acres: 6,280
Net Acres: 5,040

| Description | Units | Value |
|---|-------|---------|
| Recreation | | |
| Primitive | RVD's | 0 |
| SPNM | RVD's | 682 |
| SPM | RVD's | 0 |
| Roaded Natural | RVD's | 0 |
| Range | | |
| Existing Obligated | | |
| Suitable | Acres | 4,275 |
| Allotments | # of | 6 |
| AUM's | AUM's | 1,816 |
| Existing Vacant | | |
| Suitable | Acres | 0 |
| Allotments | # of | 0 |
| AUM's | AUM's | 0 |
| Proposed | | |
| Suitable | Acres | 0 |
| AUM's | AUM's | 0 |
| Timber | | |
| Tentative Suitable | Acres | 0 |
| Standing Volume | MBF | 0 |
| Corridors | | |
| Existing and Potential | # of | 0 |
| Wildlife — Big Game | | |
| Summer Habitat | Acres | 3,250 |
| Winter Habitat | Acres | 1,790 |
| Specific — Elk | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Specific — Deer | | |
| Summer Habitat | Acres | 1,650 |
| Winter Habitat | Acres | 640 |
| Specific — Antelope | | |
| Summer Habitat | Acres | 800 |
| Winter Habitat | Acres | 500 |
| Specific — Bighorn Sheep | | |
| Summer Habitat | Acres | 800 |
| Winter Habitat | Acres | 650 |
| Specific — Mountain Goat | | |
| Summer Habitat | Acres | 0 |
| Winter Habitat | Acres | 0 |
| Wildlife — Threatened and/or Endangered | | |
| Grizzly Bear | | |
| Habitat-Management Situation I | Acres | 0 |
| Habitat-Management Situation II | Acres | 0 |
| Habitat-Management Situation III | Acres | 0 |
| Bald Eagle | | |
| Habitat | Acres | Unknown |
| Black-Footed Ferret | | |
| Habitat | Acres | 0 |

**REGIONAL POPULATION CENTERS* AND
PROXIMITY TO ROADLESS AREAS ON
THE CUSTER NATIONAL FOREST**

| Population
Centers | Less Than
50 Miles | | 51-100 Miles | | 101-200
Miles | | 201-300
Miles | |
|-----------------------|-----------------------|-------|--------------|-------|------------------|--------|------------------|--------|
| | Areas | Acres | Areas | Acres | Areas | Acres | Areas | Acres |
| Billings, MT | 10 | 98080 | 0 | | 2 | 23400 | 10 | 118700 |
| Rapid City, SD | 0 | | 0 | | 12 | 142100 | 1 | 9800 |
| Bismarck, ND | 0 | | 0 | | 10 | 118700 | 2 | 23400 |
| Fargo, ND | 0 | | 0 | | 0 | | 0 | |

*Communities over 25,000

**CHART 1
REGIONAL WILDERNESS OPPORTUNITIES AND PROXIMITY TO ROADLESS AREAS
ON THE CUSTER NATIONAL FOREST**

| Wilderness Name | General Location | Acres | Proximity to Roadless Areas | | |
|-----------------------------|---|-------------------|-----------------------------|--------------------|-----------------------|
| | | | Beartooth
(areas) | Ashland
(areas) | Grasslands
(areas) |
| Selway-Bitterroot | Western Montana/
North-Central Idaho | 251443
1089238 | | | |
| Gospel Hump | Central Idaho | 206000 | 250 | 425 | 550 |
| River of No Return | Central Idaho | 2239000 | | | |
| Bob Marshall | Northwestern Montana | 1009400 | | | |
| Great Bear | Northwestern Montana | 286700 | | | |
| Mission Mountains | Northwestern Montana | 73900 | 250 | 350 | 450 |
| Scapegoat | Northwestern Montana | 239300 | | | |
| Gates of the Mountain | Central Montana | 28600 | 200 | 300 | 600 |
| Rattlesnake | West-Central Montana | 20000 | 225 | 400 | 475 |
| Welcome Creek | West-Central Montana | 28100 | | | |
| Anaconda Pintlar | Southwestern Montana | 157900 | 200 | 350 | 450 |
| Lee Metcalf | South-Central Montana | 232500 | 75 | 250 | 400 |
| Absaroka-Beartooth | South-Central Montana | 920400 | 0 | 200 | 325 |
| North Absaroka | Northwestern Wyoming | 350900 | 50 | 200 | 350 |
| Washakie | Northwestern Wyoming | 686600 | 100 | 200 | 350 |
| Teton | Western Wyoming | 557300 | | | |
| Glacier Primitive Area | Western Wyoming | 6500 | | | |
| Fitzpatrick | Western Wyoming | 192100 | 175 | 225 | 400 |
| Bridger | Western Wyoming | 392200 | | | |
| Popo Agie (Primitive Area) | Western Wyoming | 71300 | | | |
| Cloud Peak (Primitive Area) | North-Central Wyoming | 136900 | 150 | 100 | 250 |
| Black Elk | Southwestern South Dakota | 10700 | 300 | 150 | 200 |

**Summary of Wilderness Opportunities and Proximity to
Roadless Areas on the Custer National Forest**

| | | Beartooth | Ashland | Grasslands |
|--|--------------|-----------|---------|------------|
| Wilderness Within 100 Miles | | | | |
| | No. of Areas | 4 | 0 | 0 |
| | No. of Acres | 897200 | 0 | 0 |
| Wilderness Within 101-200 Miles | | | | |
| | No. of Areas | 3 | 5 | 1 |
| | No. of Acres | 742200 | 2525900 | 10700 |
| Wilderness Within 201-300 Miles | | | | |
| | No. of Areas | 11 | 2 | 0 |
| | No. of Acres | 5482381 | 584300 | 0 |

area is the Theodore Roosevelt Wilderness (National Park Service, USDI) bordering the Wannagan area on its eastern edge.

E. Contribution to the National Wilderness Preservation System

There are no known vegetative habitat types, plants or animal species, or geologic types in this area that are not currently represented in existing wilderness areas. Most of the existing roadless areas represent western montane ecosystems. Very few areas representing ecosystems characteristic of the northern great plains, such as the Wannagan area, have been designated in the National Wilderness System.

F. Public Interest and Concerns

In September 1983 the public was asked to comment on the roadless areas on the Forest; specifically, on the 1983 adjusted roadless inventory and on people's interest in the management of these areas. Of the responses received, only 8 referred to the Wannagan area specifically. Interest expressed about this area focused on the need to maintain a portion of the National Grasslands ecosystems in a wilderness classification. Interest was also expressed concerning the need to maintain the area in an undeveloped condition to maintain certain wildlife values. Contrasting this was the interest expressed about keeping the area open for possible future developing of potential oil and gas reserves. Through previous land use planning it was identified that most local people are opposed to formal classification of the area. The final 1979 RARE II allocation was a non-wilderness designation.

Comments on the 1985 Draft EIS for the Forest Plan again indicated continued support for wilderness or a roadless designation for the Ash Coulee Roadless Area. By far the majority of those who responded to the wilderness/roadless issue were concerned with the roadless areas in North Dakota. Many of the commenters from North Dakota expressed the opinion that all of the remaining roadless areas in North Dakota should either receive a wilderness or a roadless management designation. Most of the people who commented supported the alternatives that recommended the area for wilderness or a roadless classification. Most of the support came from regional or national commenters, and local groups and individuals. These commenters expressed the opinion that "enough of the roadless lands in North Dakota have been sacrificed to energy development."

Opposition to a wilderness or roadless designation came mostly from local user groups such as livestock producers, the oil and gas industry, and local individuals. Most of these groups or individ-

uals supported a "multiple use" management concept or expressed the view that enough wilderness and roadless areas already existed in the nearby Theodore Roosevelt National Park. These commenters felt that a wilderness or roadless designation was too restrictive and that development was a positive benefit for the local and state economies.

III. Alternatives and Environmental Consequences

A. Management Prescription Assignment by Alternative

Table C-44 describes prescription assignment by alternative.

B. Environmental Consequences

1. Designation: Wilderness Management Prescription: Wilderness

The Wannagan area is designated totally to wilderness in Alternatives 4 (5,040 acres), 5a (5,040 acres) and 7a (5,040 acres).

The wilderness prescription would enhance the area's natural attributes by reducing and/or eliminating existing uses and facilities. The two-track roads in this area would be closed to motorized vehicles and would revegetate to native grasses due to non-use. No additional intrusions would be allowed.

There is no suitable timber which would be affected by this prescription. Hardwood draws and juniper pockets would be protected from firewood and post or pole cutting.

Depending on future mineral activity, wildlife habitat would otherwise probably not be significantly affected under a wilderness prescription since domestic livestock grazing would remain as the primary competition for forage. Disturbance of wildlife due to human activity would be reduced due to the elimination of motorized traffic, although hunting would still be allowed. Habitats would change through natural ecological succession as affected by livestock grazing.

Domestic livestock grazing would be allowed to continue but some of the management practices associated with this use could probably change. A wilderness designation would not, however, be used as an "excuse" to gradually phase out grazing or to adjust the numbers of livestock. The maintenance of support facilities would be allowed to continue and where practical alternatives do not exist, maintenance or other activities could be accomplished through the occasional use of motorized equipment. In general, activities or facilities established prior to a wilderness designation would be allowed to remain in place

TABLE C-44
MANAGEMENT EMPHASIS BY ALTERNATIVE
WANNAGAN ROADLESS AREA L1DBE

| Management Prescription | ACRE ALLOCATION BY ALTERNATIVE | | | | | | | | | | | | | | | |
|----------------------------------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|----|------|------|-----------|
| | Alternative | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 5a | 5b | 5c | 6 | 6a | 6b | 7 | 7a | 7b | 8 | 9 PA 10 |
| Wilderness | | | | 5040 | | 5040 | | | | | | | | | 5040 | |
| Minimum Level (Roadless Mgmt.) | | | | | | | | | | | | | | | 5040 | |
| Minerals | | 430 | 325 | 480 | 2168 | | 2400 | 2168 | 291 | 291 | 291 | 1414 | | | | 291 291 |
| Wildlife | | | | | | | | | 823 | 823 | 823 | | | | | 823 823 |
| Range | | 394 | | | | | | | | | | 326 | | 395 | | |
| Range/Wildlife/Minerals | | 4216 | 4715 | | 2872 | | 2571 | 2872 | 3926 | 3926 | 3926 | 3300 | | 4645 | | 3926 3926 |
| Range/Wildlife/Minerals/Roadless | | 5040 | | | | | | 69 | | | | | | | | |
| Summary of Management Emphasis | | | | | | | | | | | | | | | | |
| Roadless | | | | | | | | | | | | | | | | |
| Decade 1 | | 5040 | 5040 | | 5040 | | 4971 | 5040 | 5040 | 5040 | 5040 | 5040 | | 5040 | | 5040 5040 |
| Decade 5 | | 5040 | 5040 | | 5040 | | 4971 | 5040 | 5040 | 5040 | 5040 | 5040 | | 5040 | | 5040 5040 |
| Roadless | | | | | | | | | | | | | | | | |
| Decade 1 | 5040 | | | | | | 69 | | | | | | | | 5040 | |
| Decade 5 | 5040 | | | | | | 69 | | | | | | | | 5040 | |
| Wilderness | | | | 5040 | | 5040 | | | | | | | | | 5040 | |

and could be replaced if necessary to properly administer the grazing program.

A wilderness prescription could affect the future minerals management program on the area. If existing mineral leases expire without establishing production, the area would be recommended for withdrawal from mineral entry and leases would not be reissued.

Primitive recreation opportunities would increase as would opportunities for solitude. The primary recreational activity would likely continue to be hunting.

Nonpriced values would be affected as follows:

- Visual quality of disturbed areas (two-track roads) would improve, and overall existing visual condition would be preserved.
- Acreage representing the Northern Great Plains Ecosystem in the National Wilderness System would increase.
- Security for big game, upland game birds and raptors in Wannagan would increase.
- Soil, air and water qualities would improve from the reduction in activities over the area.
- The recreational opportunity setting would remain as non-motorized.

Economic effects would be significant. The potential for oil and gas resources in Wannagan is very high and the loss of these revenues could be high, both from leasing and future production.

Social effects would be minimal since other resource values would be protected and activities

such as grazing and hunting would still be allowed.

2. Designation: Nonwilderness Management Prescription: Minimum Level

Alternative 8 designates 5,040 acres to this prescription. Custodial or a minimum management level would be the theme of this prescription. The area would remain much as it is today, undeveloped and roadless unless existing mineral leases were developed. There would be no new mineral leases issued and livestock grazing would be reduced drastically over time. Wildlife habitat values and dispersed recreation would be left to occur naturally.

No new oil and gas leases would be issued and only minimal administration of existing developing sites would occur. The lack of administration would affect the visual resource and may result in increased erosion and sediment load.

The range management strategy that would develop would be season-long due to deterioration of range improvements. The Conservation Practices program would be implemented at a very low level. Bottoms, woody draws and riparian zones would be severely impacted.

Wildlife management program would be eliminated. This would include wildlife surveys, habitat improvement, and habitat mitigation. Wildlife habitat within the woody draws and riparian zones would deteriorate as heavy livestock use would continue to occur.

Recreation would be allowed to occur. Off-road vehicle use could be expected to increase due to

reduced Forest Service administration. This could bring about a loss of vegetation and soil erosion within certain areas.

Soil erosion could be expected to increase because of reduced ground cover brought about by heavy grazing, pressure, increased off-road use, and poorly administered oil and gas development.

EVC-visual quality would be affected as oil and gas leases are developed.

Nonpriced values would be affected as follows:

- Visual quality would decline.
- Soil and water quality would deteriorate within primary range.
- The quality of primitive recreational activities including hunting will decrease within riparian and hardwood draws.
- Wilderness characteristics within primary grazing areas would be reduced. However, the unit would remain roadless unless mineral leases were developed.
- No acres would be added to the National Wilderness System.

Economic effects could be significant. The potential for oil and gas resources is high and the loss of these revenues from not issuing new leases could be high, both from leasing and future production.

3. Designation: Nonwilderness
Management Prescription:
Range/Wildlife/Minerals

Wannagan is partially designated to this prescription in every alternative except 1, 4, 5a, 7a, and 8. Acres by alternative vary from 2,571 acres (50 percent) in Alternative 5b to 4,715 (94 percent) in Alternative 3. Approximately 78 percent (3,926 acres) is designated to this prescription in Alternative 10 (the Proposed Action). Average acreage in all the alternatives is approximately 63 percent.

The theme of this management prescription would be to maintain existing wildlife habitat values while also managing for the commodity products of livestock grazing and minerals production. Under this management prescription the wilderness and roadless character of a major part of the area would be forgone.

No suitable timber exists in Wannagan. Firewood and post or pole cutting would continue to be allowed within designated areas.

Range management goals would be to maintain AUM production at or slightly above current levels while implementing intensive grazing systems in order to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories, and planning would be done to meet targets and demands. Noxious weeds

would be treated to hold infestations at current levels. Hardwood draw habitats and general ground cover would be expected to improve. Structural range improvements would be emphasized over nonstructural.

Wildlife habitat would improve as range management practices were implemented. Improved hardwood draws and ground cover will benefit big game as well as upland game birds due to improved cover and nesting sites.

Oil and gas leases will be reissued as they expire and will contain stipulations as necessary to protect other key resource values.

Recreation opportunities would be available as they currently exist. Hunting would still be expected to be the primary activity. Opportunities for solitude would decrease.

Nonpriced values would be affected as follows:

- Existing visual quality would be decreased.
- Security for big game, upland game birds and raptors would decrease over time as the area is developed.
- Soil, air and water qualities would decrease slightly due to the increased development activities.
- The wilderness characteristics would be forgone in the area by the second decade.
- The recreation opportunity setting would change from semi-primitive, non-motorized to roadless natural appearing.

Economic effects would be minimal since most activities would occur at or near current levels.

4. Designation: Nonwilderness
Management Prescription: Range/
Wildlife/Minerals/Roadless

Wannagan is designated to this prescription in Alternatives 1 (5,040 acres) and 5b (69 acres).

This management prescription would essentially maintain the current management strategy for this portion of the roadless area. The range, wildlife, and roadless values would remain the most important considerations.

No suitable timber exists in Wannagan. Firewood and post or pole cutting would be allowed to continue within designated areas.

Range management goals would be to maintain AUM production near current levels. Intensive grazing systems would be implemented to improve livestock distribution. The Conservation Practices program would be maintained at current funding levels. Range administration, inventories and planning would be done to meet targets and demands. Noxious weeds would be treated to hold infestations at current levels. This would have some minor effects on the wilderness character of the area because of the construction of

some range improvements. However, this should not preclude a wilderness designation at some later date.

Hardwood draw habitats and general ground cover would be expected to improve.

The wildlife management program would include wildlife surveys, habitat improvement, and mitigation of other resource impacts on wildlife. Wildlife habitat within hardwood draws and primary grass range would be expected to improve because of intensive range management practices. Disturbance of wildlife due to human activity and habitat displacement due to oil and gas development would not occur, as no new wildcat oil and gas exploration would be allowed. Wildlife goals would be to maintain or improve the habitat for deer, antelope, and grouse. This would impact the range management goals to a degree in that forage needs for wildlife must be recognized. Wildlife management goals would have no effect on the wilderness/roadless attributes of the area.

This prescription would significantly affect the mineral management program for the area. Mineral leases, if reissued, would be issued with a stipulation of no surface occupancy to maintain the roadless character of the area. Existing leases and surface occupancy cut-off dates would be honored. Minerals management under this prescription would have little effect on the wilderness resource or other resource values since leases would be issued with no surface occupancy stipulations.

Recreation opportunities would be available as they currently exist. Hunting would still be the primary activity. Opportunities for solitude could be expected to remain the same, as no new exploratory drilling would be allowed on Federal minerals.

Nonpriced values would be affected as follows:

- Existing visual quality would be maintained at or near current levels.
- Security for big game, upland game and nongame wildlife would remain the same.
- Soil, air and water quality would improve due to improved range management practices.
- Although no acres would be added to the National Wilderness System, the wilderness resource would remain basically intact unless development occurred on outstanding minerals.

Not allowing surface occupancy would detract from future oil and gas revenues.

5. Designation: Nonwilderness Management Prescription: Minerals

Wannagan is partially designated to this prescription under all alternatives except 1, 5a, 7a, 7b and

8. Acres of alternative vary from 291 acres (6 percent) under Alternatives 6, 6a, 6b, 9 and 10 (the Proposed Action) to 2,400 acres (48 percent) under Alternative 5b. Average acreage for all alternatives is approximately 15 percent.

This management prescription would emphasize the production of commodity products, especially oil and gas. It is recognized that a decline in other resource outputs may occur. This prescription would result in the development and roading of the area designated to this management strategy. This would significantly impact the wilderness attributes of the area and would probably preclude future classification of that portion of the area as wilderness.

Minor, short-term reductions in livestock grazing can be expected from development of oil and gas unless development were to occur over a greater portion of the Wannagan area. If extensive oil development occurred, especially in the interior of the unit, impacts to grazing would be much higher.

Disturbance of wildlife due to human activity and displacement of wildlife habitat would be expected. Roads, well pads, pipelines, powerlines, etc., would be constructed where needed in order to expedite production.

All minerals activities within the designated acreage would have priority over other resources. Mineral production would not be dependent on mitigation of other resources and leases in these areas would contain minimal stipulations. Common variety minerals such as scoria and gravel would be inventoried and made available for commercial sale.

Nonpriced values would be affected as follows:

- Soil, air and water qualities would decline in the area.
- Existing visual quality would degrade into additional areas of EVC-4 (disturbed).
- Disturbance of wildlife would increase as additional roads are constructed.
- The quality of primitive recreation opportunities would decrease.
- Wilderness characteristics would be gone in and surrounding developed areas.

Economic effects would be significant in developed areas and would result in increased revenues to both the Federal Treasury and local governments. Social effects would center mainly on local ranchers due to less suitable acreage for grazing, less AUM's, and reductions and/or changes in the size of their operations.

6. Designation: Nonwilderness Management Prescription: Wildlife

A small portion (828 acres) of the Wannagan roadless area is designated to this prescription under

Alternatives 6, 6a, 6b, 9 and 10 (the Proposed Action). This level of management emphasizes wildlife outputs while recognizing that a loss of other resource outputs would occur.

This is a small and insignificant part of the total area. The impacts and consequences of this prescription assignment in regard to wilderness or other resources are inconsequential. Some minor adjustments in the boundaries of the area could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

7. Designation: Nonwilderness
Management Prescription: Range

Wannagan is partially allocated to this prescription under Alternatives 2 (394 acres), 7 (326 acres), and 7b (395 acres). This level of management would maximize livestock outputs in prefer-

ence to other resource outputs, except to meet legal and administrative policies.

Intensive range management systems would be emphasized, including the use of structural and non-structural improvements. Except to maintain minimum viable populations of wildlife species, all available forage would be allocated to livestock in these areas and AUM's would be increased accordingly.

This management designation represents a small and insignificant part of the total area. The impacts and consequences of this prescription assignment in regards to wilderness or other resources is inconsequential. Some minor adjustments in the boundaries of the area could be made to maintain the wilderness characteristics of the vast majority of the area and maintain resource outputs.

APPENDIX D
PUBLIC COMMENT LETTERS RECEIVED
AND
FOREST SERVICE REPLIES

APPENDIX D

PUBLIC COMMENT LETTERS RECEIVED AND FOREST SERVICE REPLIES

This appendix contains all of the public comments submitted during the public comment period for the Draft Environmental Impact Statement and Management Plan. Each letter has been responded to individually, topic by topic. This appendix is too large and cumbersome to reproduce and distribute to interested parties. Therefore, it is available for review at the Supervisor's Office in Billings, Montana. If an individual who commented on the Draft Environmental Impact Statement is interested in the Forest Service's response to their letter, a copy of the response is available upon request. Send such request to:

Forest Supervisor
Custer National Forest
P.O. Box 2556
Billings, Montana 59103

APPENDIX E

BIOLOGICAL EVALUATION

APPENDIX E

BIOLOGICAL EVALUATION

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I. INTRODUCTION

The Custer National Forest is in the process of public review of its proposed Forest Management Plan. This document, once approved, will provide direction for the management of the Forest. Planning regulations and Federal law require an assessment of the impacts of Forest management on threatened and endangered species (Endangered Species Act of 1973 as amended). This report documents the highlights of the assessment made for those threatened and endangered species that may occur on the Forest.

On July 16, 1984, the Director of Wildlife and Fisheries in the Regional Office requested an inventory of listed and proposed threatened and endangered species that may be present on each Forest in the region. The United States Fish and Wildlife Service (USF&WS) responded on August 22, 1984, with such a list. In that letter, six species were identified as possible inhabitants of the Custer National Forest. Species identified were: grizzly bear, grey wolf, peregrine falcon, bald eagle, black-footed ferret, and whooping crane. A summary of the evaluations for each of these species is included below.

II. DESCRIPTION OF PROPOSAL

The proposed Federal action is to identify management direction for all resources over the entire Forest. The preferred alternative sets expected resource outputs for various management units, as well as Forest totals. The Forest proposes to harvest 4.0 MMBF of timber annually for the duration of the plan. For the past 10 years, an average of 1.75 MMBF was harvested annually. The plan also proposes to provide for 875,000 Animal Unit Months (AUMs) of livestock grazing annually; this is approximately the same level of grazing as is currently permitted.

Minerals activities, principally oil and gas exploration and development, are expected to increase for the next 2 decades. In 1982, the pace of development was intensive, with numerous wells drilled and seismic lines shot. This level of activity is expected to continue on those areas where a producing field has been located; however, the level of activity on other areas is expected to be significantly less.

Recreation activities are expected to increase as the population levels surrounding the Forest increase. The Absaroka-Beartooth wilderness provides the single largest unit of recreational use on the Forest. It is estimated that the recreational capacity of the Absaroka-Beartooth wilderness

will be reached by 1990. The proposed alternative provides direction to address habitat needs of Federally listed threatened and endangered species.

III. THREATENED AND ENDANGERED SPECIES

A. Grizzly Bears

1. *Current Situation.* The Custer National Forest has common boundaries with the Gallatin and Shoshone National Forests and Yellowstone National Park. Ecosystems found near these borders include riverbottoms, steep timbered slopes, steep non-timbered slopes, and rocky alpine areas. These areas can provide at least seasonal habitat for grizzly bears. The areas adjacent to the Custer have population centers of grizzly bears, and there are no physical barriers to bear movement on any common boundary.

As part of the planning effort, a survey was made to identify all recent sightings. Contact was made with the Montana Department of Fish, Wildlife, and Parks; the Fish and Wildlife Service; Government trappers; Dick Knight, project leader of the Interagency Grizzly Bear Study Team; outfitters and guides; and Forest Service files.

This survey revealed the importance of the upper Stillwater drainage. This was the only area where there were any confirmed observations of grizzly bears in the last 20 years. Craighead (1977) indicated that four of the five grizzly bear mortalities that occurred on the Custer were in the upper Stillwater drainage. In addition, the tracks of a sow and cub were observed in 1971 near Huckleberry Lake. The tracks of two sows, each with one young, were seen in 1950 near Glacier and Wounded Man creeks. These last observations were all made in the upper Stillwater drainage.

2. *Habitat Evaluation.* Federal regulations require that the constituent elements be mapped (CFR 424, Vol. 45, #40, 2-27-80) in the determination of critical habitat. Guidelines for delineating constituent elements for grizzly bear habitat were developed on the Gallatin National Forest after consultation with the Interagency Grizzly Bear Study Team, and these constituent elements were followed on the Custer.

a. *Constituent Elements.* Constituent elements of grizzly bear habitat provide all the requirements for the existence of the species, which include: security (cover), food, space, and reproduction. These elements must be present in adequate amounts and be adequately distributed in order to meet the requirements for species sur-

vival. A matrix of land types and constituent elements was organized by S. Johnson and J. Light of the Gallatin National Forest. They defined constituent elements as: dens; day beds; mating habitat; foraging and traveling areas; and spring, summer, and autumn feeding habitats.

b. *Mapping.* Land type maps were available for all grizzly bear occupied habitat. These were used as base maps, and constituent elements were overlaid on them (Map 1). These are listed in Table E-1. The land types were correlated with the key habitats and grouped into four seasons (Table E-1). These periods generally correspond to significant progressive developments in plant phenology and bear behavior. The land type groups were designated as either primary or secondary, depending on whether the elements were preferred or essential to the physiology of the bear (primary), or if they provided incidental cover for day bedding and travel between primary elements (secondary).

3. *Diversity.* One indicator of habitat value is the diversity of constituent elements within an area. To evaluate diversity, the Custer portion of the Absaroka-Beartooth wilderness was divided into three areas: upper Stillwater River, lower Stillwater River, (including the Rosebud drain-

ages), and Beartooth Plateau.

The highest diversity unit was the upper Stillwater unit. This area is composed of shallow to deep soils and moderate to steep slopes containing moderate to high amounts of rockland, chiefly gneiss and schist. Flat plateaus with alpine, wet meadows, and whitebark pine stands occur.

The lowest diversity was on the Beartooth Plateau unit. A large percentage of this area consists of one land type (rocky lands with alpine turf and scattered whitebark pine). The lower Stillwater rated a medium diversity. There were fewer units than in the upper Stillwater, but more than on the plateau, and units tended to be intermediate in size.

Based on the diversity rating and evaluation of key items, such as proximity to known population centers and location of whitebark pine stands, the upper Stillwater was designated as Management Situation I. The lower Stillwater (exclusive of the Rosebuds which were low in diversity and far from population centers) and portions of the plateau were designated Management Situation II (Map 2).

4. *Recovery Plan.* The Grizzly Bear Recovery Plan identifies six grizzly bear ecosystems

TABLE E-1
KEY HABITATS FOR GRIZZLY BEAR

| Season | Primary Constituent Element | Secondary Constituent Element |
|---|---|-------------------------------|
| Spring
(April to mid-June) | 1 — All whitebark pine areas
2 — Big game winter ranges
3 — Riparian areas
4 — Space | All remaining habitats |
| Early summer
(mid-June to late July) | 1 — Riparian areas
2 — Wet alpine fir sites in drainage bottoms
3 — Alpine fir stands with scattered potholes
4 — Grasslands with gopher populations
5 — If present, cutthroat spawning streams
6 — Whitebark pine areas
7 — Elk calving areas
8 — Space | All remaining habitats |
| Late summer
(late July to mid-September) | 1 — Riparian areas
2 — Wet alpine fir habitats
3 — Wet alpine fir/spruce habitats on broad ridgelines
4 — All whitebark pine areas
5 — Wet alpine meadows
6 — Alpine fir habitats with scattered potholes
7 — Elk rutting areas
8 — Big game hunting areas where the seasons are open
9 — Space | All remaining habitats |
| Fall
(mid-September denning) | 1 — All whitebark pine areas
2 — Grasslands
3 — Elk rutting areas
4 — Big game hunting areas (gut piles and carrion)
5 — Space | All remaining habitats |

in the contiguous 48 states. Objective 4 of the Recovery Plan (page 1) states "Establish recovery of at least three populations in three distinct grizzly bear ecosystems in order to delist the species in the conterminous 48 states." The plan states that the YGBE should be the first priority for recovery efforts due to the large data base and the ongoing research and management in the area.

5. *Targets and Goals.* The Regional Plan (1981) set a goal of nine bears for the Custer. These goals were based upon a density calculation for current populations (MS-I areas = 34 miles²/bear; other MS = 68 miles²/bear) and the present estimate of a population of grizzly bears sufficient to bring about delisting as a threatened species. The present analysis places 35,000 acres in MS-I, and 100,000 acres in MS-II. Using the density figures given above, this results in a capacity of two bears in MS-I areas and two in MS-II areas for a Forest total of four bears.

Estimates of grizzly bear densities are based upon the best information available, but are still only estimates. Information from researchers indicates that the potential for bears in the YGBE is approximately 316 bears (one bear/28 square miles). Recovery goals state that there should be at least 25 females with cubs-of-the-year, and the reproductive rates should be 2.2 cubs/female.

The present grizzly bear population can only be estimated. Craighead and others (1974) estimated the population of grizzly bears in the Yellowstone ecosystem to be 222 bears in 1959. This is a density of one bear to 38 square miles of occupied habitat. Craighead and others (1976) documented a population increase from 1959 to 1967 from 222 to 245 bears, and then a decline from 1967 to 1974 from 245 to 136 bears. The most recent estimate of bears is 197 (Knight et al., 1982). There is some concern that this estimate is too high.

By calculating the number of acres of occupied habitat with the densities derived from research, the Custer could be able to support six bears under a maximum density (1/28 miles squared) or five bears under a density of one bear per 38 square miles.

Of the total acres of occupied habitat on the Forest (110,511 acres), 94 percent occur within the Absaroka-Beartooth wilderness (103,724 acres). This wilderness was maintained in all alternatives. In addition, under all alternatives, the acres of occupied habitat outside of wilderness (6,787 acres) were maintained.

One of the identified limiting factors in the recovery of grizzly bears is the number of preventable grizzly bear mortalities. A preventable mortality is one which could have been reasonably avoided by management actions and is not a legal hunting

mortality. In order to facilitate recovery, all Forests in the YGBE have a target of zero preventable mortalities. There have been no reports of grizzly bear mortalities of any kind on the Forest.

6. *Analysis.* The analysis of the value of the habitats clearly revealed that the upper Stillwater area was the best habitat on the Custer, but even this was of less value than areas such as Slough Creek on the Gallatin. This is reflected in the low number of bear observations. Upper Slough Creek, which is the first drainage west of the upper Stillwater, is a population center for bears, with numerous observations of bears compiled yearly. Only one observation of bears (tracks) has been recorded in the last 8 years in the Stillwater. There are no physical barriers to movement o between these drainages; and with the notable exception of the headwater area of the Stillwater, human activities in both drainages are comparable.

It appears that the Custer does not provide suitable habitat to maintain a year-long population of bears. However, seasonally it does provide key elements such as whitebark pine stands, which bears seek out. It is probable that grizzly bears travel onto Custer lands seasonally.

Indirect evidence, such as relocations of marked bears, indicates that the headwaters area of the Stillwater River serves as a corridor for grizzly bears traveling between the Slough Creek and Cooke City areas (Map 1). This area is heavily mineralized, and many claims have been patented. The recent changes in gold and silver prices have spurred activity on these claims. A four-wheel drive road crosses this area leading to Lake Abundance, a popular fishing spot. In recent years, there have not been any reports of conflict between bears and man. If activity levels do not increase substantially, the area should remain relatively secure for bears.

The analysis that was made as part of the planning effort was based upon habitat evaluation and updated observations and reports. Stratification into management situations was consistent with the direction provided in the "Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Ecosystem" (the Guidelines). The Custer presently has 5,507 acres in Management Situation I, 110,511 acres in Management Situation II, and no acres in Management Situation III.

7. *Management Direction in the Forest Plan.* The goal for threatened and endangered species in the Forest Plan is to assist in the recovery of Federally listed species. In any management area, threatened and endangered species and their habitats are protected. The grizzly bear areas on the Forest will be managed in accordance with the document "Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Ecosystem" (USDA Forest Service 1979), hereafter

referred to as the "Guidelines." The Forest has been managing under the Guidelines since 1980, and the preferred alternative continues in this direction. Forest plan direction is to manage all occupied habitat in accordance with the Guidelines (Draft Management Plan, Chapter II, p. 25). For those areas outside the wilderness, the management direction goal is to manage these key wildlife habitat areas for the optimum quality and diversity the land can offer. Other resource activities will be modified to maintain or improve the existing habitat. Conflicts that cannot be successfully mitigated will be resolved in favor of wildlife habitat perpetuation (Draft Management Plan, Chapter III, p. 13). In addition, the preferred alternative recommends no leasing of minerals within the designated MS-I area.

8. *Determination of Effects.* The preferred alternative does not propose any action that would adversely impact grizzly bears or their habitats on the Forest. Management will be in accordance with the Guidelines, which is a continuation of current direction. The recommendation of No Surface Occupancy (NSO) in the MS-I area will continue the current status of those areas. Most of the occupied habitat is within the Absaroka-Beartooth wilderness and not available to development. The area outside is not classified as commercial timber, nor is it within any range allotment. Only one allotment is within the occupied area, and it has not been stocked since the 1960's. It is proposed for closure as part of the preferred alternative. The redefinition of occupied areas represents a more accurate assessment of the ecosystems based upon habitat evaluations. Those habitats that were originally included within the occupied line that did not meet the criteria within the Guidelines and the constituent elements have been deleted. Since these areas do not meet current knowledge of habitats necessary or desired for grizzly bear survival, their deletion will not adversely affect grizzly bears on the Forest. In summary, the preferred alternative will not affect the continued existence of grizzly bears on the Forest.

B. Grey Wolf

1. *Current Situation.* Studies have concluded that there is not a viable population of wolves in the Greater Yellowstone area (Weaver 1978). However, the Yellowstone's ecosystem has been identified as potentially suitable for the recovery of the grey wolf (Fiath 1980). While there has been occasional reports of wolves, the last substantiated report of a wolf on the Forest was in the 1920's.

2. *Habitat Evaluation.* The last wolves to survive in the area were in the Greater Yellowstone ecosystem. Habitat evaluations, both in this report and in the recovery plans, center on this area.

While historically the wolf utilized a number of habitats ranging from open grasslands to timbered mountains, the principal characteristics appear to be an abundance of natural prey and, more recently, minimal conflict with human interests, principally livestock (USF&WS 1980). Principal winter ranges for moose, elk, and deer on the Forest are located in the lower end of the Stillwater Canyon, along the Beartooth Face and in the Line Creek area. In every case, the winter range is only partially on Federally administered lands. Calculations based solely on pounds of meat available indicate that the Forest is capable of feeding at least five wolves through a winter (Table E-2). However, since most of the winter the prey populations exist on private lands, it is most likely that any wolves that move onto these lands will have a diminished chance of survival.

TABLE E-2
HABITAT POTENTIAL FOR WOLVES
BASED UPON FOOD REQUIREMENTS

| | | | |
|----|---|-------|------------|
| 1. | One wolf requires 9 pounds of meat per day.* | | |
| 2. | $\frac{9 \text{ lbs. meat/day}}{\text{lbs. meat/wolf/}} \times \frac{30 \text{ days}}{\text{winter day}} \times 6 \text{ months}$ | | = 1,620 |
| 3. | Five wolves would require 8,100 lbs. of meat/winter.
5 (1,620 lbs. meat/wolf/winter) = 8,100 lbs./meat/
5 wolves/winter. | | |
| 4. | Number of elk required: | | |
| | $\frac{8,100 \text{ lbs. meat required}}{600 \text{ lbs. ave. weight/elk}}$ | | = 13.5 elk |
| 5. | Number of deer required: | | |
| | $\frac{8,100 \text{ lbs. meat required}}{150 \text{ lbs. ave. weight/deer}}$ | | = 54 deer |
| 6. | Provided capacity in the preferred alternative: | | |
| | Deer = | 3,000 | |
| | Elk = | 850 | |
| 7. | Conclusion: | | |
| | In terms of food availability alone, the Forest can provide for five wolves. | | |

*Based upon regional advice.

If wolf recovery is attempted through reintroductions in Yellowstone National Park, it is possible that at least three packs could be maintained in an area greater than 8,000 square miles. It is probable that these wolf packs would center around the migratory elk herds in the major wintering areas of the Greater Yellowstone area (Huston 1982). None of these major wintering areas are on the Custer National Forest (Map 2).

3. *Recovery Plan.* The Recovery Plan for the Northern Rocky Mountain Wolf was approved in 1980. It states as its primary objective: To reclassify *canis lupus irremotus* to threatened status by re-establishing and maintaining at least

two populations within its former range. The plan indicates where the present distribution of Northern Rocky Mountain wolves occurs (Map 3). The Custer National Forest does not contain any lands identified on this map.

4. *Targets and Goals.* The Northern Region Plan (1981) identifies a target of five wolves for the Yellowstone National Park and vicinity. This figure was derived from the Northern Rocky Mountain Wolf Recovery Team's recommendations. The Recovery Plan for the Grey Wolf (USF&WS 1980) identifies two criteria for wolves: (1) an abundance of natural prey, and (2) minimal conflict with human interest, especially livestock. The Northern Rocky Mountain Wolf Recovery System proposes a zone concept for wolf habitats. This zone system recognizes these two criteria and does not include any lands on the Custer National Forest within a recovery zone.

5. *Analysis.* The analysis of the habitat and the criteria established by the wolf recovery plan indicates that the Custer National Forest does not provide secure habitat for wolves on the winter ranges. The revised recovery plan, when approved, will designate zones of recovery which do not include lands administered by the Forest. There is the possibility that if wolves were reintroduced into the Yellowstone ecosystem, that an occasional summer migrant could wander onto the higher elevations of the Forest.

6. *Management Direction in the Forest Plan.* No lands on the Custer were identified as essential for the wolf, and specific direction for the wolf was not written. However, the Management Direction in the Draft Forest Plan states that the "Forest will cooperate with future interagency efforts to aid the recovery of threatened and endangered species" (Chapter II, p. 25, b.6).

7. *Determination of Effects.* No lands were identified as essential for the wolves in the analysis, nor were there any secure habitats available for wolves in winter. Implementation of the preferred alternative will not affect the Northern Rocky Mountain wolf or its habitats.

C. Black-footed Ferret

1. *Current Situation.* At present, there are no known populations of black-footed ferrets (BFF) on the Forest. Since 1910, there have been 25 reports of BFF sightings or sign on the Forest, all on the Little Missouri National Grasslands in North Dakota (Table E-3). Two BFFs are known to have been taken from the Forest, one from the Ash Creek drainage in 1936, and the other from the confluence of Dantz Creek and the Little Missouri River in 1969. Since most sightings have occurred in or close to prairie dog towns, these areas are considered habitat for the ferret. In 1977, a survey of prairie dog towns was made on

the Ashland Ranger District in Montana for evidence of BFFs. Criteria used were plugged holes and trenching. Size of towns was not considered. No ferrets were observed, although some signs of trenching were seen.

As part of the endangered species program, the Forest Service, in 1979, designated seven prairie dog towns on the Forest as essential habitat. These designations were based on the following criteria: actual ferret sighting in a specific dog town and/or ferret sign (plugged burrows and/or ferret tracks, and large dog towns without ferret sign, but adjacent to towns that did have sign).

2. *Habitat Evaluation.* The literature adequately describes the close relationship of ferrets and prairie dogs (Henderson et al., 1969; Snow 1972; Linder and Hillman 1973; Linder et al., 1972; Hillman 1974; Herman and Willard 1977; Linder et al., 1978). Prior to the discovery of an existing black-footed ferret (BFF) population near Meeteetse, Wyoming, most literature on this animal was based upon a population that existed in South Dakota in the 1960's. At the present time (December 1984), new information is only starting to be published from the Wyoming studies. Habitat evaluation during the Forest planning effort was based upon the older studies and information from the newer ones was included as it became available.

Hillman et al. (1979), recommended as minimal ferret habitat, the maintenance of at least eight prairie dog colonies per township, with each colony at least 30 acres in size, and two or more colonies should exceed 100 acres. No area of the Forest presently meets these requirements. (Information from the newer studies appears to indicate that these size and distribution requirements are very minimal and may not be sufficient to support a population of ferrets over time.) At present, no town or complex of towns meets the minimum requirements set forth by Hillman as necessary to support a population of BFFs over time.

3. *Recovery Plan.* The Black-footed Ferret Recovery Plan was approved in 1978 (USF&WS 1978). It states as the primary objective: Maintain at least one wild, self-sustaining population of black-footed ferrets (BFF) in each state within its former range. No lands were identified as recovery areas.

4. *Targets and Goals.* The only target or goal, as yet established for black-footed ferrets (BFFs), is the primary objective in the Recovery Plan. The recent finding of a population of BFFs in Wyoming has increased the possibility of reintroductions; however, this is unlikely in the near future (Clark, pers. com.).

5. *Analysis.* None of the prairie dog towns, nor any complex of prairie dog towns, on the

TABLE E-3
REPORTED BLACK-FOOTED FERRET SIGHTINGS IN NORTH DAKOTA

| Year | County | Location | Reported or Sighted By | Source of Information |
|--------|---------------|---|----------------------------------|-----------------------|
| 1910 | Billings | Medora vicinity | Howard Eaton | Bailey (1) |
| 1912 | Emmons | Fort Rice vicinity | H. C. Fish | Bailey |
| 1913 | Dunn ? | Quinion (between Killdeer and Medora) | S. G. Jewett | Hillman (2) |
| 1915 | Mercer | Stanton | Kellogg | Bailey |
| 1933 | Billings | Ash Coulee (Sec. 16, T142N, R101W) | J. Harold Johnson | Hillman |
| 1936 | Billings | Blacktail Creek (Sec. 14, T143N, R101W) | Art Elkins and J. Harold Johnson | Hillman |
| 1945 | Golden Valley | Sec. 34, T144N, R103W | Francis Boyce | Boyce |
| 1948 | Slope | Sec. 32, T135N, R105W | Merle Clark | Clark |
| 1955 | Adams ? | 15 miles east of Hettinger | Irving Mork | Leppart (3) |
| 1957 | ? | Cedar River | Ernest Pittsley | Leppart |
| 1961 | Burleigh | East of Bismarck | S. H. Richards | NDGFD (4) |
| 1963 | Kidder | Sec. 12; T139N, R73W | Herb Troester | Hillman |
| 1964 | ? | Fort Berthold Indian Reservation | Dr. Ralph Hubbard | Hillman |
| ? | ? | Theodore Roosevelt | Dr. Ralph Hubbard | Hillman |
| 1965 | ? | Fort Berthold Indian Reservation | Sam Miller | Leppart |
| 1966 | Bowman | Near Bowman | Morris Erickson | Hillman |
| 1966 | Bowman | 3 miles south of Marmarth | Morris Erickson | Hillman |
| 1969 | Billings | Sec. 19, T138N, R102W | | Muggs Vanvig |
| 1960's | ? | Theodore Roosevelt National Memorial Park | Dr. Harold Goetz | Hillman |
| 1967 | Golden Valley | Sec. 20, T134N, T104W | Irving Mork | NDGFD |
| 1967 | Mountrail | 1 mile N.W. Parshall | Don Strube and Dennis Eltestad | Leppart |
| 1968 | Morton | Sec. 21, T137N, R80W | John Goertel | NDGFD |
| 1971 | Morton | Sec. 28, T135N, R80W | Lowell E. Siebels | NDGFD |
| 1973 | Bowman | Sec. 25, T130N, R106W | Thomas M. Lavelle | BSFW |
| 1973 | Slope | Sec. 26, T136N, R100W | J. A. Schaeffer | BDFW |

- (1) Bailey, V. 1926. A biological survey of North Dakota, N. Amer. Fauna No. 49, 226 pp.
- (2) Letter dated Jan. 19, 1973 from Conrad Hillman, Research Biologist, BSFW, 919 Main St, Rapid City, South Dakota.
- (3) Leppart, G. 1970. Black-footed ferret — a vanishing species. N. Dak. Outdoors 32 (11): 18-20.
- (4) North Dakota Game and Fish Department files, Bismarck.
- (5) Personal communication with William K. Pfeifer, Wildlife Biologist, Area Office, BSFW, Bismarck, N. Dak.

Forest meets the minimum requirements for black-footed ferrets (BFFs), as described by Hillman. Information from the Meeteetse population indicates that even larger complexes of prairie dog towns are needed to insure the long-term survival of the BFF. Surveys have failed to reveal any indication that ferrets currently exist on the Forest.

6. Management Direction in the Forest Plan.

The Forest Plan recognizes the importance of prairie dog towns as habitat for the black-footed ferret (BFF) (Management Plan, Chapter II, p. 25), and retains the 1977 designation of certain towns as "occupied." However, new surveys are planned using the techniques developed on the Meeteetse colonies, and the occupied designation will be changed if no ferrets are found. The preferred alternative identifies acceptable prairie dog acreages by district so that these animals will continue to exist on the Forest (Management Plan, Chapter II, p. 29). In addition, the management direction also requires a BFF survey for any town that is to be controlled (Management Plan, Chapter II, p. 25).

7. *Determination of Effects.* The retention of prairie dog acreages at approximately the 1972 level should insure that the prey habitat for black-footed ferrets (BFFs) will not be extirpated from the Forest. Protecting the prey species and requiring surveys for BFFs prior to control indicates that implementation of the preferred alternative will not effect the BFF.

D. Peregrine Falcons

1. *Current Situation.* There is one historical and one probable peregrine eyrie on the Forest. There is one record of eggs being taken in the Little Missouri National Grasslands; however, the most recent sightings have been on the Red Lodge district. Surveys in recent years, including a helicopter survey in 1984, have not provided confirmed sightings of a peregrine falcon on the Forest. However, there have been consistent reports of possible sightings in the Pryor Mountains. The 1984 survey did find a peregrine approximately 5 miles from the Forest boundary. As part of the endangered species program, 120,800 acres were designated as essential habi-

tat for the peregrine on the Red Lodge Ranger District.

2. *Habitat Evaluation.* Nesting habitats for peregrine falcons is principally on steep cliff faces (Cade 1960; Hickey, ed., 1969; Snow 1972). The preferred cliff is usually long, overlooking water and generally dominating the surrounding area (Bond 1946). Habitat evaluations (Escano 1982, Becker 1979) indicate that suitable habitat exists on the Forest, principally on the Red Lodge and Sioux districts. Suitable habitat may also exist on the Little Missouri National Grasslands in the badlands type.

3. *Recovery Plan.* A recovery plan for the Rocky Mountain Southwest population was approved in 1977 (USF&WS 1977). The stated prime objective is to increase the peregrine populations in the Rocky Mountain and Southwest regions to a minimum of 100 effective breeding pairs by 1995.

4. *Targets and Goals.* No goals or targets have been established except for those in the recovery plan.

5. *Analysis.* Surveys made as a part of the Forest Plan and other projects have not indicated any current peregrine nesting on the Forest; however, some birds were observed near the Forest boundary. These surveys have included the historical sites and also some of the better cliffs where peregrines may have nested in the past. At present, there are populations of peregrines nesting on the Forest.

6. *Management Direction in the Forest Plan.* The preferred alternative supports reintroduction of the peregrine falcon in the Lost Water Canyon area; it also retains the essential habitat designation for peregrines made in 1978. Major portions of the cliff habitats on the Sioux Ranger District are to be allocated to a wildlife emphasis which will afford protection for raptors. Provisions exist in the preferred alternative to protect any peregrine falcon found on the Forest.

7. *Determination of Effects.* The designation of the principal cliff ecosystems to wildlife emphasis on the Sioux Ranger District will insure protection for peregrine habitat in that area. Retention of the designated essential habitat areas on the Red Lodge district will insure that protection is afforded to the peregrine habitat in that area. Designation of the Lost Water Canyon area for reintroduction of the peregrine should assist in the recovery of the species when, and if, the Recovery Fund decides to hack peregrines in this area. Implementation of the preferred alternative will not adversely affect recovery of the peregrine falcon on the Forest.

E. Bald Eagle

1. *Current Situation.* There are no known

active bald eagle nests on the Forest. There have been reports of bald eagles nesting in North Dakota a few miles from the Forest boundary. There is a concentration of wintering bald eagles on the Sioux Ranger District. There are occasional observations of eagles near or on the Ashland Ranger District during winter; however, these appear to be migrants. In 1979, the Forest designated 41,500 acres as essential habitat for the eagle.

2. *Habitat Evaluation.* Bald eagles usually nest near water; and on the Forest, free-standing water is a limited resource. Possible habitat exists in those cases where the Forest would provide a suitable nesting site and the foraging areas would be on private land. Wintering populations of eagles are often associated with water and winter game ranges. Suitable occupied habitat does occur on the Forest, as well as other areas where there is a winter concentration of game animals which do not have populations of bald eagles. Populations of bald eagles use portions of the Forest as winter roost areas. There is no known nesting on the Forest in recent years, although one eagle did nest close to the Forest boundary in 1982.

3. *Recovery Plan.* A recovery plan for the bald eagle is currently being drafted.

4. *Targets and Goals.* No goals have been assigned to the Forest.

5. *Analysis.* Marginal habitat exists on the Forest for nesting bald eagles, although there are no known active nests. A population of wintering bald eagles does exist on a concentrated winter game range, and there are other similar areas on the Forest that do not presently have populations of bald eagles wintering on them.

6. *Management Direction in the Forest Plan.* Forest direction includes: A biological evaluation of potential impacts to threatened and endangered species and their habitat will be made for every project undertaken by the Forest. The winter roost area is principally within the designation Management Area D which has as a goal: to maintain or improve the quality and diversity of wildlife and fish habitat (Management Plan, Chapter III, p. 19). The management standard for timber in this area states that timber harvest will be guided by silvicultural prescriptions and that these prescriptions will identify timber treatments that will perpetuate or improve key wildlife habitat (Management Plan, Chapter III, p. 20).

7. *Determination of Effects.* The retention of the 1977 designation of essential habitat and the threatened and endangered requirement of a biological assessment prior to any project, as well as the silvicultural constraints applied to the winter roost area, indicates that the implementation of the preferred alternative will not affect bald eagle recovery.

F. Whooping Crane

1. *Current Situation.* Records of radio-tracked birds indicate that whooping cranes regularly cross the Little Missouri National Grasslands (LMNG) during migration; however, there are no records of whooping crane sightings on these lands. Two sightings were made near Medora, one in 1961 and one in 1975, both presumed to be observations of flying birds. Some old, second-hand reports seem to indicate that whooping cranes have used the Little Missouri River (Anderson 1984, pers. comm.).

2. *Habitat Evaluation.* Observations of cranes indicate that these birds use ponds and reservoirs as resting areas during migration. The LMNG has numerous stock ponds which may be suitable for cranes. In addition, the Little Missouri River provides suitable resting habitat for these birds.

3. *Recovery Plan.* The 1980 Recovery Plan for the Whooping Crane is being revised.

4. *Targets and Goals.* No targets or goals have been assigned to the Forest for whooping cranes.

5. *Analysis.* Whooping cranes use ponds and reservoirs as resting areas during migration, and occasional use of the stock ponds on the LMNG is a possibility. The lack of observations may be due to infrequent use of the land by these birds and/or the remoteness of the area.

6. *Management Direction in the Forest Plan.* Due to the lack of information concerning use of the LMNG by whooping cranes, and the indication that any use is occasional, no specific direction was developed for this species in the Management Plan; however, they are included under the general direction for threatened and endangered species which requires that a biological evaluation of potential impacts to threatened and endangered species and their habitat will be made for every project (Management Plan, Chapter II, p. 25).

7. *Determination of Effects.* The proposed action will not change the amount of stock dams available on the LMNG, and the whooping crane and its habitat needs will be included in any project proposed in the area. Implementation of the preferred alternative will not affect the recovery of the whooping crane.

G. Interior Least Tern

1. *Current Situation.* The interior least tern is being proposed for listing. There are no known records of interior least terns on the Forest.

2. *Habitat Evaluation.* Nesting habitat for this bird is on sandbars in larger rivers, and the principal large river on the Forest that could provide habitat for this bird is the Little Missouri River. Only a limited amount of this river is under Forest Service administration. Portions of the Grand River in South Dakota may also provide habitat for this species, and only a limited portion of the North and South Forks of this river is under Forest Service administration.

3. *Recovery Plan.* A recovery plan has not been developed.

4. *Targets and Goals.* No targets or goals for this species have been assigned to the Custer National Forest.

5. *Analysis.* There are only limited areas on the Forest which could provide habitat for this species. These areas are classified as riparian, and management direction for these areas includes wildlife species habitats as a major component.

6. *Management Direction in the Forest Plan.* The riparian zone is classified as a separate management area with direction to maintain and/or improve the ecosystem. Direction for threatened and endangered species includes the requirement for a biological evaluation prior to any project; and if a threatened and endangered species is found, then the project will be modified to avoid adversely affecting the species found. If the project cannot be modified to avoid impacting the species, then the project will be disallowed (Management Direction, Chapter II, p. 25).

7. *Determination of Effects.* The probable suitable habitat for the tern occurs within a management area with special direction to preserve and or improve that habitat, and the general threatened and endangered direction is to identify potential impacts to threatened and endangered species and their habitat prior to any activity. Implementation of the preferred alternative will not affect the recovery of the tern.

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