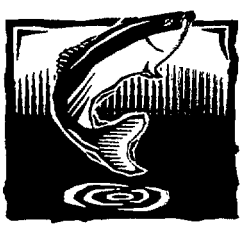
UNITED STATES DEPARTMENT
OF AGRICULTURE

FOREST SERVICE

ROCKY MOUNTAIN REGION



FINAL ENVIRONMENTAL IMPACT STATEMENT

To accompany the 1997 Revised Land and Resource Management Plan

SUMMARY

Arapaho and Roosevelt National Forests and Pawnee National Grassland

SUMMARY





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Final Environmental Impact Statement

SUMMARY

Arapaho and Roosevelt National Forests
Pawnee National Grassland
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INTRODUCTION

This is a summary of a *Final Environmental Impact Statement (FEIS)* for the Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARNF-PNG). This *FEIS* is the companion document for the ARNF-PNG's *Revised Land and Resource Management Plan,* more commonly called the *Forest Plan.* Every National Forest in the United States is managed according to its *Forest Plan*, and each *Plan's FEIS* shows how the *Plan's* management principles and decisions will affect both the environment and its uses.

The ARNF-PNG *Forest Plan,* the *FEIS* and the *FEIS Summary* in your hands now are the product of a revision process that began in 1989 and involved your participation along each step of the way. This *Summary* will describe that revision process and your involvement in it. It will give you an overview of the *Forest Plan* and *FEIS* contents, explain how each document is used by the Forest Service, and how you can use each of them too. It will give you a guide to finding more detailed information on each subject of interest to you in the *Forest Plan,* the *FEIS* and their associated appendices and maps.

In fulfilling its most important responsibility, this *Summary* will:

- review the key issues in managing the Forests and Grassland
- present the *alternative approaches* we've developed for dealing with these issues
- describe the probable effects of, and differences between, the alternatives
- show you opportunities for your continued participation in the management and welfare of the Forests and Grassland, managed by the ARNF-PNG.

The new *Forest Plan* and its *FEIS* are the product of years of intensive collaboration between Forest Service specialists and the hundreds of private individuals and organizations who have taken their time to comment and advise us on the draft *EIS* and *Forest Plan.* We believe these final versions of our revised *Forest Plan* and *EIS* are a much better reflection of how you and others like you feel the Forests and Grassland should be managed. We begin our review of these documents with a hearty thanks to each and all of you for your help.

Figure 1

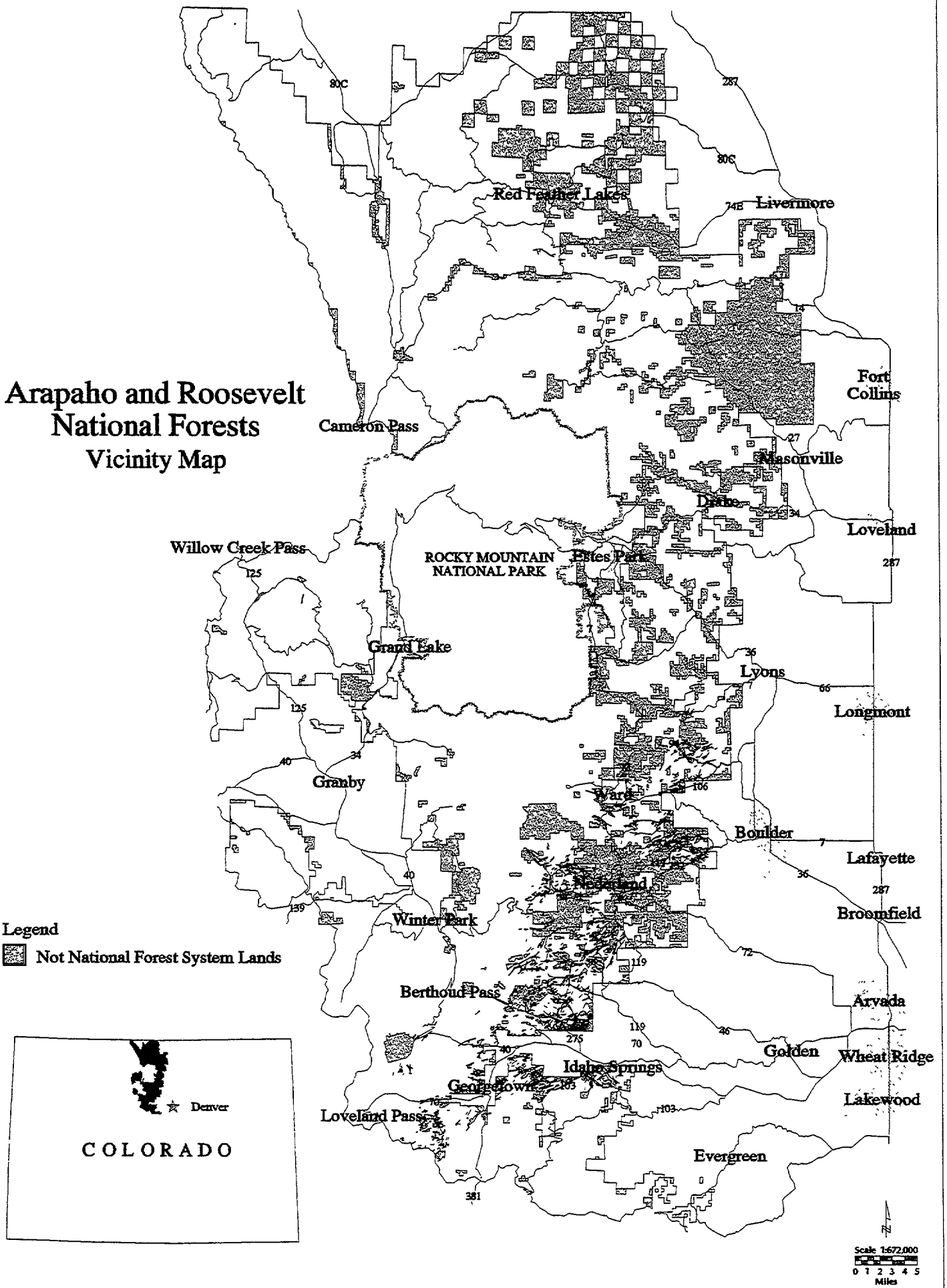
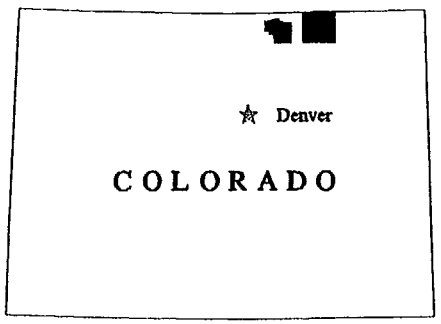
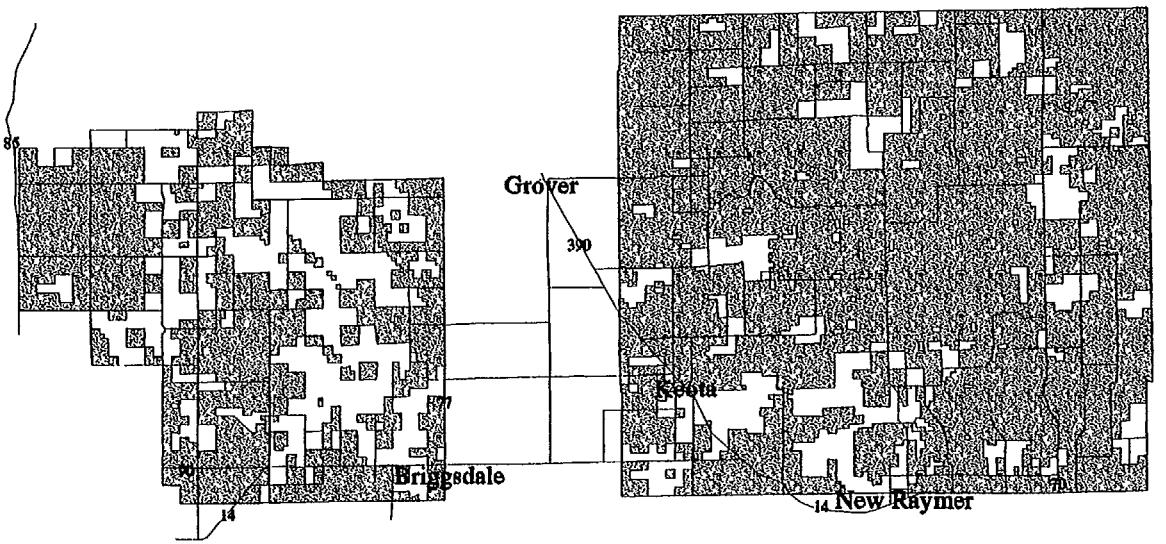

Arapaho and Roosevelt National Forests
Vicinity Map
Red Feather Lakes
Livermore
Fort Collins
Cameron Pass
Masonville
Drake
Loveland
Willow Creek Pass
ROCKY MOUNTAIN NATIONAL PARK
Estes Park
Grand Lake
Lyons
Longmont
Granby
Ward
Boulder
Lafayette
Nederland
Broomfield
Winter Park
Berthoud Pass
Arvada
Golden
Wheat Ridge
Idaho Springs
Georgetown
Lakewood
Loveland Pass
Evergreen
Legend
Not National Forest System Lands
Denver
COLORADO
Scale 1:672,000
0 1 2 3 4 5
Miles

Figure 2

Pawnee National Grassland
Vicinity Map





PART ONE: THE FORESTS AND GRASSLAND OURS TO USE AND PROTECT

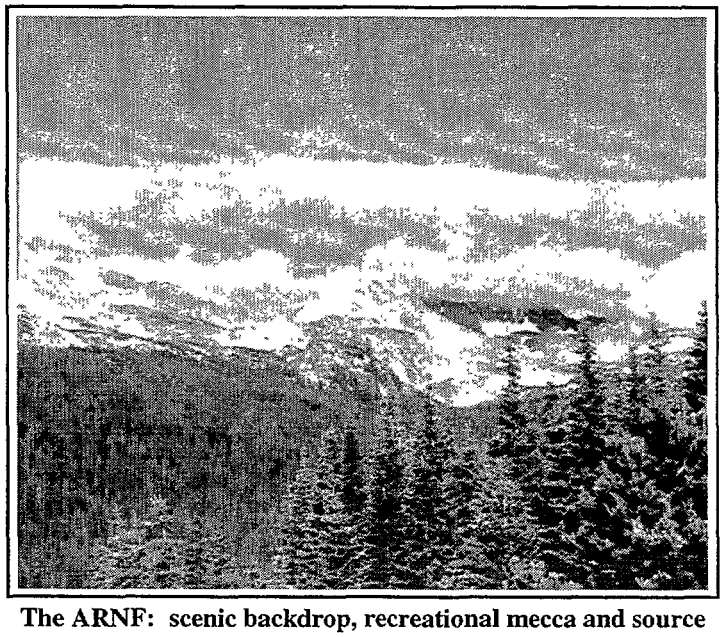
Let's first get acquainted or reacquainted with the Forests and Grassland and then plunge into the work we've outlined for this *FEIS Summary.*

The ARNF-PNG are a single administrative unit of the Forest Service and are one of many other National Forests in the State of Colorado. All of Colorado's National Forests and Grasslands are part of the Forest Service's Region 2 with headquarters in Lakewood, Colorado. Headquarters for the ARNF-PNG is in Ft. Collins.

Together, the ARNF and PNG cover almost 1.5 million acres. The two Forests occupy portions of the foothills and the majority of the high mountain country along the Front Range of the Rockies, spanning the Continental Divide from west of Denver north and around Rocky Mountain National Park, then continuing north along the eastern slope of the Medicine Bow crest to the Wyoming border--a total north-south distance of about 95 miles. The ARNF-PNG is administered by six ranger districts--one for the PNG, four for the Forests east of the Continental Divide (Boulder, Clear Creek, Estes-Poudre, Redfeather), and one for the Forest west of the Divide (Sulphur).

Geography and History

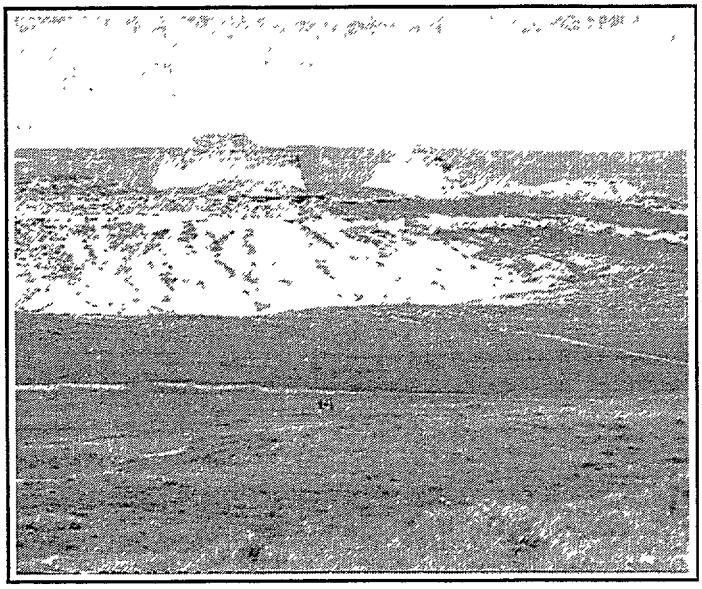
The mountains of the Front Range rise dramatically from the high plains at around 5,000 feet to the Continental Divide which remains above timberline for nearly all of its distance in the ARNF, much of it above 12,000 feet, and dotted with numerous peaks above 13,000 feet and three above 14,000 feet. The region now covered by the ARNF has long been celebrated for its spectacular scenery and has figured prominently in Colorado's history. Vacation brochures as early as the 1880s featured the region's glacially carved peaks, snowfields, alpine meadows, gemlike lakes, and dramatic canyons.



The ARNF: scenic backdrop, recreational mecca and source of numerous goods and services for northern Colorado.

Since early in Colorado history vacationers and health seekers flocked to the area, drawn by the spectacular scenery, the healthful high, dry climate, and easy access from Denver and other Front Range cities. Adding drama to beauty and the pursuit of health came the

pursuit of wealth: much of Colorado's famous gold mining boom was centered in the Colorado Mineral Belt which is now part of the ARNF. Mining left a complicated pattern of private land claims now interspersed with the National Forest that is part of the legacy of the ARNF and part of the challenge to its management.



No less dramatic than the mountains 25 miles away, the treeless Grassland is covered with the low vegetation of shortgrass prairie.

The Grassland, originally habitat for the free-roaming bison herds and the nomadic Indian tribes who followed them, experienced in turn the cowboy era of free-range cattle up and down the prairie from Texas to Montana and homesteading by small-scale ranchers and dryland farmers. The Pawnee Buttes, prominent landmarks on the PNG, were famous guideposts for westward-bound settlers. Today the gradual return of some of the land to native prairie ecosystems, along with measured amounts of livestock grazing and oil and gas development, characterize the PNG, where private and public lands also intermingle.

Forest and Grassland Resources

The demand for resources, including timber, minerals, grazing land and water, has always been part of the region's history. Both agriculture--surprisingly successful for the high-prairie location--and urban development along Colorado's Front Range have always been inseparably linked to the supply of water. With completion of the Big Thompson Project in 1947, the forests of the western and eastern sides of the ARNF became functionally linked through west-to-east water transport under the Continental Divide. A byproduct on the western side was the Arapaho National Recreation Area (ANRA), one of the country's premier mountain water recreation areas.

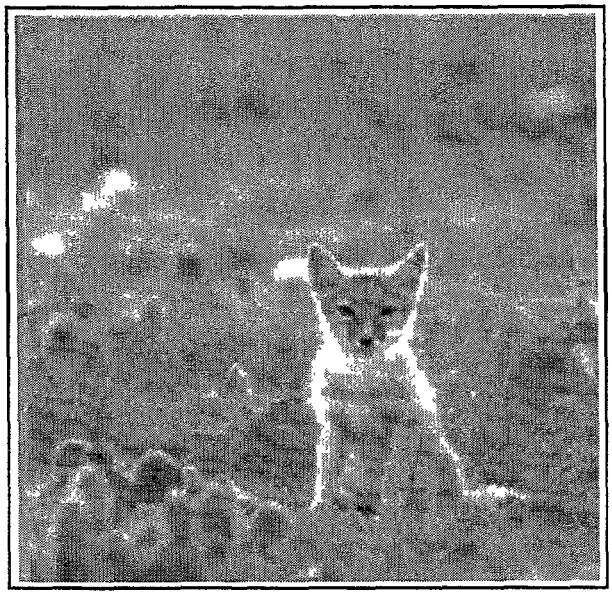
The ARNF-PNG exemplifies a trend common throughout much of the American West in the dramatic rise of recreation and tourism, together with vigorous growth in jobs and income in the related service industries. Many traditionalists and many environmentalists tell us that they view the shift as a mixed blessing, but one apparently bound to continue. A section of the *FEIS* titled "Social and Economic Elements," examines jobs and income from the Forests and Grassland and their effect on the eight surrounding counties--six in Colorado and two in Wyoming.

Today the ARNF ranks among the country's top National Forests in year-round recreational use. It boasts several world-class ski areas, the famous ANRA just mentioned, the country's highest paved road up 14,000 foot Mt. Evans, a segment of the National Continental Divide Scenic Trail,

Mountain biking: one of the fasting growing forms of recreation on the ARNF.

several national historic sites, eight wilderness areas, Colorado's only National Wild and Scenic River, and direct scenic and geographic links with Rocky Mountain National Park which it surrounds and which alone receives over 2 million visitors a year.

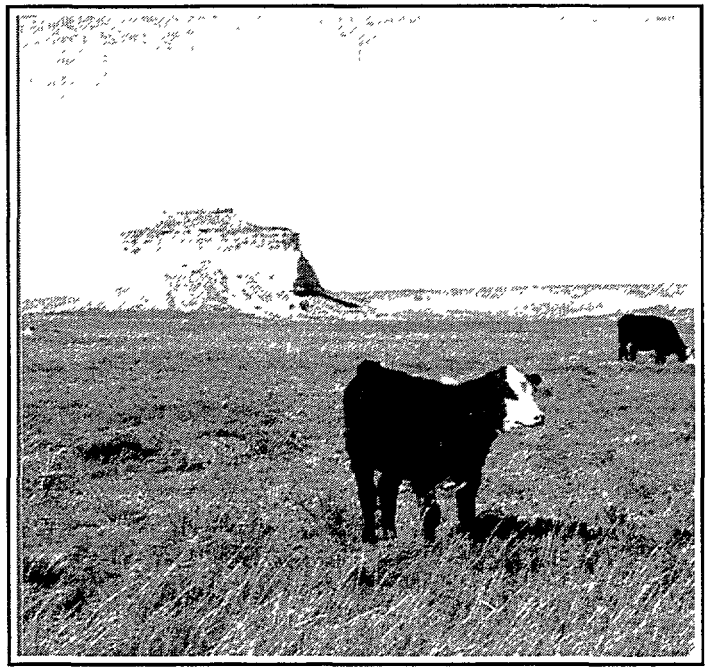
The close proximity and easy access to the ARNF-PNG by a Front Range metro area population of nearly three million people designate it officially as an "urban National Forest." One of the consequences of this is that the Forests are asked to be a great many things to a great many people. Nearly a dozen mountain towns, numerous subdivisions and many individual private land parcels, for example, are interspersed with Forest lands. The wishes and requirements of mountain residents are often quite different from those of the people who drive from the cities for a day or weekend of recreation.



Fox at home on the range on the Pawnee National Grassland.

Is enough left over for nature's other creatures aside from us humans? So far, yes, and we must be sure it remains so. The ARNF-PNG provides habitat for over 400 species of wildlife, including several nationally designated threatened, endangered or sensitive species, and including most of the mammals traditionally associated with the American West: deer, elk, bighorn sheep, black bear, mountain lion, pronghorn antelope, coyotes, beaver, and others. Moose, reintroduced in 1987, is successfully extending its range on parts of the ARNF. A number of fish species, among them rainbow, brook, brown, cutthroat and lake trout, inhabit the Forests' waters. The *FEIS* devotes much of its discussion and much of its analysis to balancing human uses of the Forests and Grassland with the perpetuation of nature's own processes and populations. Oil and gas leasing on the PNG, for example, avoids disturbance during the mountain plover's nesting period. The mountain plover is a small bird in the prairie ecosystem whose status is classified as "sensitive."

The theme that runs throughout the *FEIS* is that our needs and nature's needs *can* coexist and can in many instances even be mutually supporting. The *FEIS* is a document about ecology. Its job is to give voice and reliable scientific data to each of the claims made upon the ARNF-PNG's resources. The ways in which each kind of activity affects and is affected by virtually all others is a fascinating and instructive story, one vitally connected to our whole global outlook in this age of shrinking resources and growing populations. You will find that you the people, you the public, you the resource manager, are as much represented in the *FEIS* as all the interconnected parts of nature itself. And, more important, your activities, rather than being superimposed upon those of nature, are interconnected *with* them. Humans, in short, are part of and can and must learn to think of themselves as part of, the ecology of the Forests and Grassland. And that, we believe, is a privilege rather than a burden, as well as a maturing experience for our American democracy. As one correspondent wrote to us recently, "With both nature and our democratic system of government operating on the principle of checks and balances, we ought to be able to do business together." Let us take that viewpoint with us as we examine the documents that will guide the management of the ARNF-PNG into the new century.



Harkening back to the era of free-range cattle, grazing remains part of the Pawnee National Grassland's economy.

PART TWO: REVISING THE *FOREST PLAN*

Let us quickly review the reasons for revising the 1984 *Forest Plan* and the steps in accomplishing that. The revised *Forest Plan* and the *FEIS* summarized here are the result of a revision process that began in 1989. The first *Forest Plan* was approved in 1984, but was appealed by the Colorado Mountain Club (CMC) and remanded back to us in 1987 for further analysis of the timber program. In 1989 the Regional Forester, with the concurrence of the Forest Supervisor, entered into an agreement with the CMC to suspend action on the remand and to initiate revision of the whole *Plan* instead.

The decision was timely, because the National Forest Management Act (NFMA) requires forest plans to be revised every ten to fifteen years anyway, and revisions take several years. Forest plans can also be revised on an even earlier schedule if the conditions they cover change significantly. Forest Supervisors are required to review their plans every five years to determine whether conditions or the demands of the public have changed significantly. And an interdisciplinary team assigned to monitoring and evaluating the effectiveness of the plan can also recommend revision of the *Plan* to keep it an up-to-date and responsive working document. All of these procedures contributed to the birth of the ARNF-PNG revised *Forest Plan.*

Figure 3 shows you the steps along the way in which you have participated and which have led to the 1997 *Forest Plan*, ready at last to replace the 1984 *Plan*. Here are some of the highlights of the revision process:

- The Forest Supervisor in a five-year evaluation report, identified major areas needing change and in depth analysis.

- Study of the key issues, methods and philosophy of management, and the total resources of the ARNF-PNG, led to the statement of *major and minor revision topics,* which we will describe for you in the next section. The revision topics were spelled out in a 1993 document called *Analysis of the Management Situation.*

- During this stage our interdisciplinary team (IDT) worked hard to review the Forests' and Grassland's resources, past and present, relevant historical and environmental conditions, public perceptions, values and expectations, and all new and relevant scientific findings. Modern forestry is a blend of basic science, applied science, practical and economic utility, and values--the values that belong to nature itself and the values that we humans bring to it. As we all know, values change and values differ, depending on who you talk to. And values sometimes conflict with each other, even though they all may be "good" values.

- In 1992 an ecological approach to forest management became both explicit and mandatory. Forest Service Chief Dale F. Robertson, in a June 4, 1992 directive, announced that "an ecological approach will be used to achieve the multiple-use management of the National Forests and Grasslands. It means that we must blend the

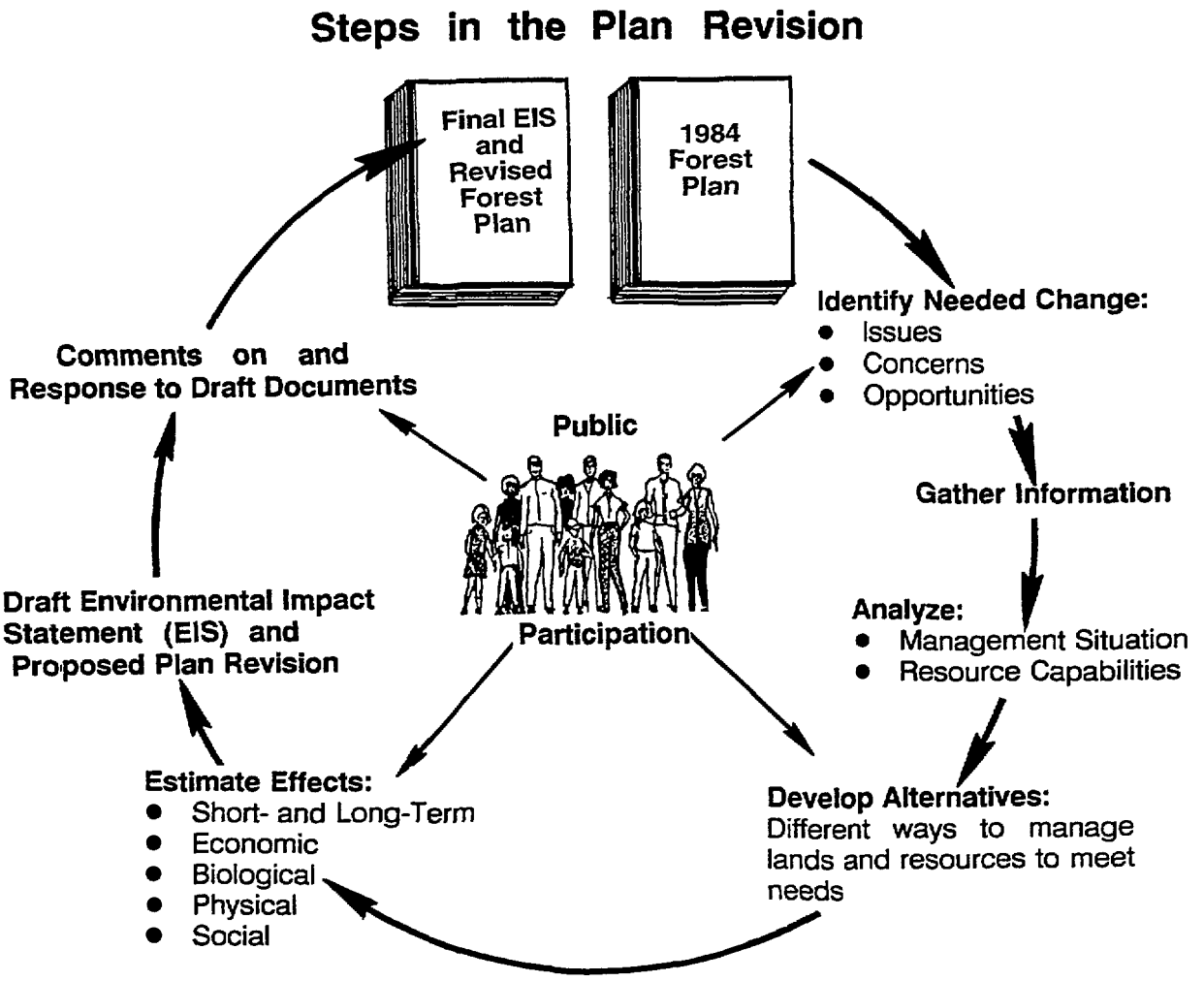


Figure 3 Steps in Revising the *Forest Plan*

needs of the people and environmental values in such a way that the National Forests and Grasslands represent diverse, healthy, productive, and sustainable ecosystems." A new era called "ecosystem management" had begun, adding a major new focus to the Forest Service's long-standing principle of "multiple-use" management. And we needed to make ecosystem management a central and unifying theme of our *Forest Plan* revision.

- The working definition of ecosystem management needed to be clarified. The *Forest Plan* would be geared to maintaining the health and diversity of ecosystems *while still*

meeting the people's needs. It would seek to maintain ecosystem functions, restore deteriorated ecosystems, maintain habitat and species diversity, preserve longterm sustainability, *and* accommodate human uses and values. Stated the other way around, the Forest would provide products and services for humans *within the limits* of ecosystem health and biological diversity. The reason for and the practical message for ecosystem management boiled down to common sense and practical economics: Nature will give and we may take, but if we do not maintain the Forest's ecosystems, the Forest, even trying its hardest, will at last falter, and the flow of goods and services will dry up.

- The next major step in the revision process was to develop *alternative approaches* to addressing the revision topics. Doing so was both a legal requirement and the best possible kind of exercise for examining a wide spectrum of values, practical applications of those values, human expectations, and the needs and limits of the Forests and Grassland themselves. Two main sections of this *FEIS Summary* will walk you through the alternatives and compare them for you. Of the six alternatives, one will be chosen and will become the new *Forest Plan.* But all will retain significance as *the permanent record* of how all options and viewpoints were considered and where the chosen alternative fits into the spectrum of possibilities, values, needs, and natural limitations.

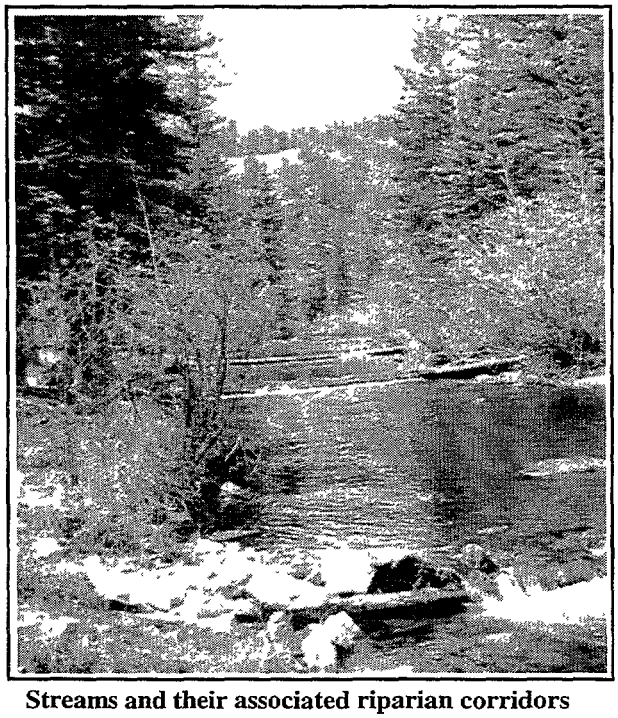
- As all of you know who commented on the *Draft Environmental Impact Statement (DEIS)* the purpose of that document was to show in detail how each alternative met the dual purpose of projecting goods and services to be derived from the Forests and Grassland while preserving their ecological integrity. On page after page of narrative and in table after table of numbers, the *DEIS* compared the various alternatives for you to study and evaluate. Through voluminous input from you--including over 1,500 letters--and through a great deal more work on our part, we refined the *DEIS* into the *FEIS* now being issued and the new *Forest Plan* which draws upon all the detailed guidance of the *FEIS.* We believe the *FEIS* and *Forest Plan* are important and lucid documents for guiding us into the new century. With that background, we're now ready to look at the revision topics and the alternatives that address them.

PART THREE: THE REVISION TOPICS

The *revision topics* deal with the issues most relevant to updating the *Forest Plan* and--by no means accidentally--deal with the issues that are often most controversial and of greatest concern to the public. Some of the revision topics cover several related issues, but all have clear titles and clear intent.

Revision Topic: Maintenance of Biological Diversity

Management to maintain biological diversity (biodiversity) applies growing scientific evidence that the natural world is made up of a complex web of relationships, even the smallest of which cannot be disturbed without risking damage to the whole. Forest and Grassland management must maintain the integrity of plant and animal communities, individual species within those communities, different genes within species, and the thousands of different ways individual organisms interact with one another and their environment.



Streams and their associated riparian corridors provide the conditions for a rich diversity of land and aquatic life forms.

Biodiversity is affected by both human uses and natural processes. In the lengthiest chapter of the full *FEIS* the many elements of biodiversity are discussed both in general scientific terms and with specific reference to the ARNF-PNG. Making use of these insights, a major advance in the 1997 *Forest Plan* over the 1984 *Plan* is the development of methods to manage, monitor and measure our success in maintaining biodiversity. The very first cluster of *forestwide goals and objectives* in the new *Forest Plan* is titled "Biodiversity, Ecosystem Health and Sustainability." It establishes goals to assure productive, healthy, ecosystems, blending social, physical, economic and biological needs and values to enhance forest health, manage old growth forests, improve conditions for threatened, endangered or sensitive plant and animal species, to protect air, soil and water resources, insure a full range of all stages of forest community types, and so forth. Twelve specific objectives prescribe measures for bringing about the realization of these goals, then no fewer than 50 of the 185 goals, standards and guidelines that govern our daily work on the Forests and Grassland spell out policies and procedures that bear upon biodiversity and wildlife on land and in water.

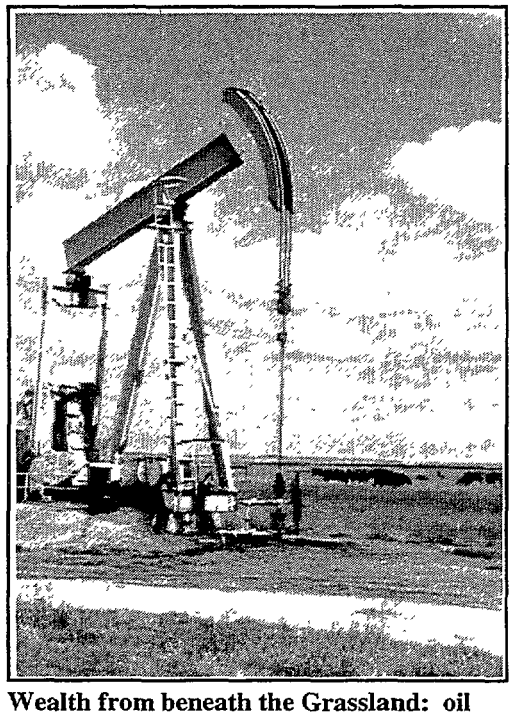
Revision Topic: National Forest and Residential Intermix

A certain amount of private land has always existed inside and on the borders of ARNF-PNG lands. More and more people are now building homes or otherwise developing these lands. The existence of so much developed private property among ARNF-PNG lands can break up wildlife's winter ranges, restrict recreational access, and change the quality of a user's recreation experience.

The intermix: subject of a newly defined management category.

The revision process has given us a chance to assign such areas to a particular management strategy, called the *Intermix management area prescription.* The primary purpose of the Intermix prescription is to maintain cooperative relationships between landowners and federal land managers, to provide for compatible multiple uses, reduce the potential for destructive wildfires, and consolidate land ownership.

Managing intermix is a sensitive issue because residents themselves have different and often conflicting perceptions about how National Forest land near or adjacent to their properties should be managed. Some want to ride motorized trail bikes out their back doors while others object to the noise. Some may want trees cut as a protection against fire, while others will protest cutting as an assault on their scenic vistas. It's not hard to imagine many other scenarios, as well as scenarios in which the recreating public disagrees with residents over questions of access and use of public lands near intermix areas. The job of the revised *Forest Plan* has been to establish the amount and location of lands in the ARNF-PNG assigned to the intermix prescription and what activities can and cannot occur in the intermix, with variations among the different alternatives.



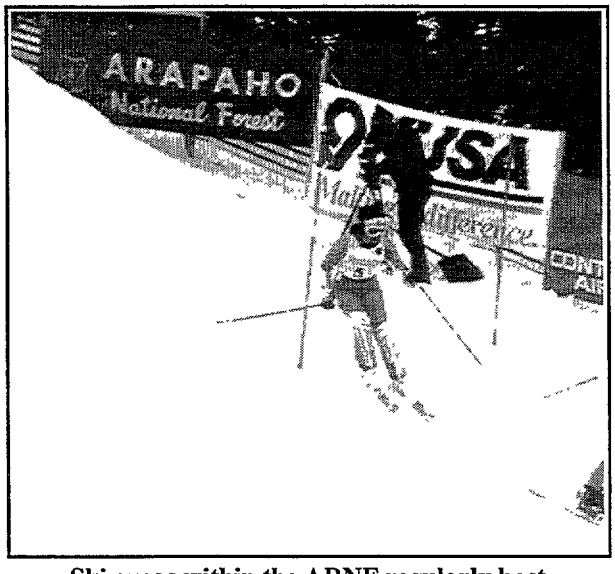
Wealth from beneath the Grassland: oil and gas exploration remains a high priority in this northern Colorado location.

Revision Topic: Oil and Gas Leasing

The oil and gas industries prefer that large areas of lands be made available for leasing and they feel that their activities on ARNF-PNG lands can be moderated to acceptable levels. Other users see oil and gas development as being in conflict with biodiversity and recreation, and would prefer little

or no oil and gas development on ARNF-PNG lands. The subject applies mostly to the PNG, but two mountain areas, where oil and gas potential exists, are also involved.

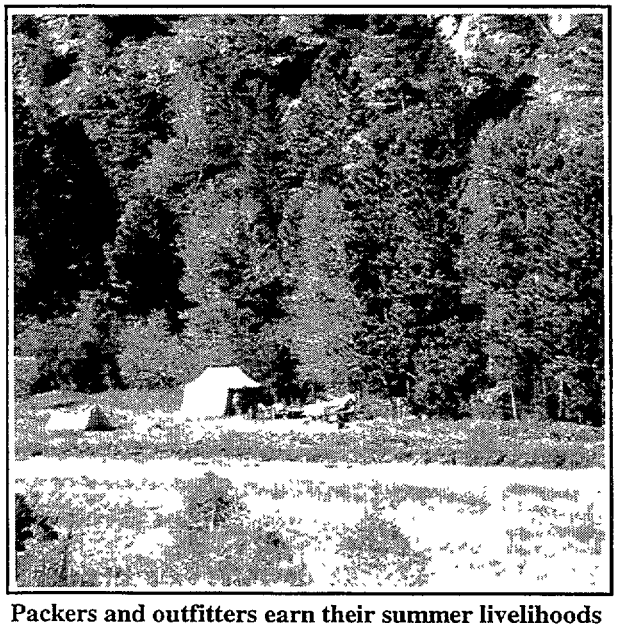
A law passed in 1987 requires that we conduct an analysis to determine what areas of the ARNF-PNG could be offered for oil and gas leasing, and that we authorize the USDI-Bureau of Land Management to do so. Thus, as one of its requirements, the new *Forest Plan* establishes the amount and location of lands available for leasing. The actual number of acres leased and developed for oil and gas will probably depend on demand for these resources over the next ten years, which is in turn related to complicated geopolitical trends.



Ski areas within the ARNF regularly host international competitions.

Revision Topic: Recreation Related Issues

The recreation activities of a growing population have placed a great deal of pressure on the ARNF-PNG lands and facilities. Public comment on the subject during the revision process revealed strong interest and strong sentiment in several directions. The issues in recreation management fall into five subcategories: developed recreation, dispersed recreation, recreation settings, scenic resources, and wild and scenic rivers.



Packers and outfitters earn their summer livelihoods in dispersed recreation areas of the ARNF.

Developed recreation areas include campgrounds, picnic areas, and downhill ski areas. Because of heavy use and budget constraints, many of the facilities at developed recreation areas are in poor condition. The revised *Forest Plan* establishes guidelines for the types, locations, and numbers of facilities we will be able to provide.

Managing for recreational uses is one of the major categories of *forestwide standards and guidelines* governing our daily operations. Also, specific management areas have been designated in the *Forest Plan* for developed recreation and for recreational complexes.

Dispersed recreation areas include most lands in the ARNF-PNG that are not in developed recreation areas--in other words, the vast majority of the Forests and Grassland. Hiking, fishing, hunting, snowmobiling, and crosscountry skiing are only some of the activities that take place in dispersed recreation areas. Dispersed recreation accounts for almost two-thirds of all recreational use and is growing so rapidly that it may double every eight or nine years. Many feel that enough land exists in the ARNF-PNG to absorb the increase *if* the activities can be distributed more effectively. Roads and trails, suitable parking, backcountry campsites, and information about the availability of dispersed areas are the keys to distributing the users throughout the ARNF-PNG. The revised *Forest Plan* addresses these issues through a cluster of *forestwide goals, standards and guidelines* and a special management area category for dispersed recreation.

Recreation settings refers to the conditions necessary for various types of users to enjoy themselves on the ARNF-PNG, whether that entails a stretch of good wildlife habitat, a sense of isolation, or an expanse of untracked snow. However, different users may have conflicting requirements for recreation settings (rafters vs anglers, hunters vs wildlife viewers, etc.) which can lead to public complaints and management problems. Increased use of all sorts can also harm an area. In addition, many users believe that some activities such as logging and grazing irretrievably damage the quality of their recreation experience. The new *Forest Plan* determines which kinds of recreation activities should get priority in specific areas, and then manages those areas to maintain conditions that will assure a satisfactory experience. Public input during the revision process made it clear that the public wants a wide range of recreational settings and revealed a need for balance between semiprimitive nonmotorized and semiprimitive motorized settings--both in high demand now and no doubt even more so in the future.

The Cache la Poudre River offers nationally famous boating waters.

Scenic resources are an attribute that almost all visitors to the ARNF-PNG expect to find. Yet many regularly occurring activities in the ARNF-PNG can alter the scenery and have led to past disputes. To help establish standards for scenery, we use what are called "visual quality objectives" (VQOs) for lands in the ARNF-PNG. Lack of clarity in VQO direction in the 1984 *Forest Plan* resulted in differing interpretations of the conditions the Forest should achieve and the permissible management actions. Implementation of the *Forest Plan* was consequently hindered by the need to determine the VQO on a case-by-case basis. The revised *Forest Plan* clearly defines and explains VQO standards and makes them easier to apply in management situations. Five *forestwide standards and guidelines* apply to scenery management, and a special management area category governs specific scenic areas. Also, a detailed Scenery Management

System is slated to be implemented on the Forests and Grassland starting in Fiscal Year 1999 as an amendment to the new *Forest Plan.*

Recommendations for additions to the *National Wild and Scenic Rivers System* is one of the formal requirements of the new *Forest Plan.* Comments gathered since issuance of the 1984 *Plan* have, furthermore, indicated strong public interest in the subject. During the revision process we inventoried and studied all the rivers and streams in the ARNF-PNG and recommended the North Fork of the Cache la Poudre River as a candidate for inclusion in the National Wild and Scenic River System. The *Forest Plan* contains a special management area for wild rivers (both designated and eligible) and for recreation rivers (also both designated and eligible). No scenic rivers exist or have been recommended. As with all other subjects, the alternatives vary in their stance toward river designation.

Revision Topic: Inventoried Roadless Areas

We are also required by law to evaluate all the roadless areas in the ARNF-PNG, choosing which to recommend for wilderness designation, and establishing guidelines for managing those

The use of roadless areas has sparked debate throughout the revision process of the *Forest Plan.*

roadless areas not recommended for wilderness. Roadless areas and wilderness are subjects of strong and persistent public concern, with widely divergent opinions. Some believe that enough wilderness has been designated and that multiple-use management is now appropriate in roadless areas. Others believe in preserving ecosystems in a largely undeveloped condition through prescriptions such as Research Natural Areas. Still others believe the only real and permanent protection will be through wilderness designation. The Forest Service, it should be noted, can only make recommendations for wilderness designation. The U.S. Congress makes final

decisions by passing or defeating wilderness bills in a process that can take many years and may involve considerable changes to the original proposals. As for roadless areas *not* made wilderness, should they be kept roadless, with the current scenic and ecological balances unchanged? Should motorized access be allowed, along with other activities such as logging, oil and gas leasing, and developed recreational sites? At stake for the debate are 38 roadless areas on the ARNF-PNG totaling 330,230 acres. Part Five will tell you the differences among the alternatives.

Revision Topic: Timber Related Issues

You will not be surprised to learn that this too is a subject that has caused the fur to fly in both directions. The topic focuses on how much ARNF-PNG land is suitable for timber production. Recall that legal action challenging our timber program was one of the chief reasons for undertaking the revision project in the first place. The 1984 *Plan* overestimated the timber growth and yield estimates.

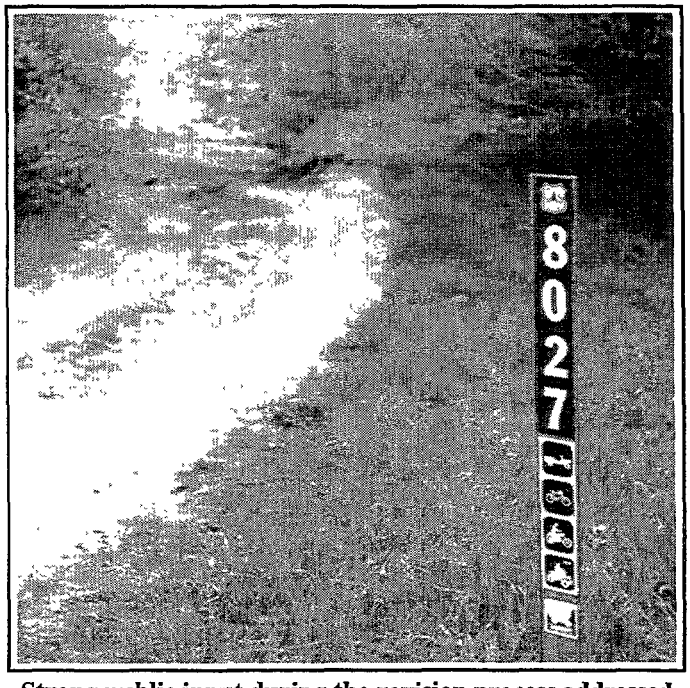
Timber: In high demand but diminishing supply.

Law requires that timber harvest levels be regularly set and met for each National Forest. We have run into difficulty meeting our projected timber harvest levels, chiefly because many of the chosen timber production areas have been harvested to the point that they have approached the tolerance limits set for other resources such as water quality, soil erosion, big game cover, and scenery. Because the standards and guidelines for these resources take precedence over timber outputs when conflicts occur, the ARNF-PNG will probably never again rise to the 30 million board feet per year level projected in the 1984 *Forest Plan.* About two dozen *forestwide standards and guidelines* govern timber harvest operations, and tables in the management area sections of the *Forest Plan* specify whether, or to what extent, timber harvest is allowed in each kind of management area.

Apart from supplying timber products, timber harvest--as the *FEIS* explains--is an important tool for managing biodiversity and ecosystems, insect and disease populations, tree growth and yields, recreation settings, wildlife habitat and wildfire hazard mitigation--all aspects of the modern science of silviculture.

Revision Topic: Travel Management

This topic encompasses management of all motorized and nonmotorized access to the ARNF-PNG, including roads and trails. Increased user pressure has created conflicts on roads and trails. Conflicts between hikers and users of off-highway vehicles is the most familiar example. Travel management, according to the interdisciplinary team, remains one of the most controversial facets of forest management. The management direction and goals set in the 1984 *Forest Plan* were too general to establish priorities and arbitrate conflicts. They needed to be updated to give more direction regarding compatible travel modes and appropriate recreation settings. The revision process examined the types of desired travel opportunities, the best locations where the ARNF-PNG can provide these opportunities and the best strategies for managing them.



Strong public input during the revision process addressed the subject of travel management.

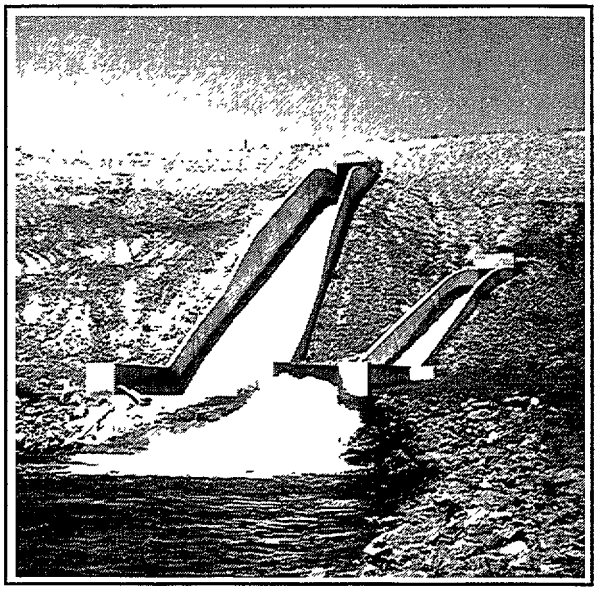
The overall goal of the new *Forest Plan* is to provide an integrated travel system that considers various modes of motorized and nonmotorized uses consistent with the resource capability of each area. It seeks a balance, in other words, between meeting the travel needs of ARNF-PNG users and commodity producers, while still providing sufficient protection for fragile resources. Many of the *forestwide standards and guidelines* apply to travel. "Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes and wetlands," is one example. Further, the prescriptions for each management area in Chapter Three of the *Forest Plan* contain tables that show whether motorized recreation is allowed, and to what extent. Last, but bound to be of special interest to many, the revised *Forest Plan* features a "travel management strategy table" for each geographic area stating the modes of travel presently existing and the extent of proposed changes expected to occur during the lifetime of the *Plan.* The introductory narrative near the start of Chapter Two of the *Forest Plan* orients readers on the use of these informative and useful tables for any area the reader wishes to investigate.

Revision Topic: Instream Flows and Water Yield

At the moment all streams that originate in the ARNF-PNG, like most streams and rivers in the U.S. West, are "overappropriated." That is, water users hold the rights on paper to more water than is actually flowing in the streams. The demands for water on the Colorado Front Range have grown to a point that there is not be enough water left in some water courses to support riparian and aquatic life. Water concerns are reflected in many of the *standards and guidelines*

of the *Forest Plan,* since one of the mandates of the National Forests is to insure a continuous supply of clean water and to maintain aquatic and riparian ecosystems. The key element analyzed for the revision was, therefore, to maintain sufficient flow in perennial streams while meeting the need for water storage and development.

To help meet increased water demands, the 1984 *Forest Plan* contained a management prescription, 9B, that was designed to increase water yield through timber harvest. Water that trees use becomes available for streamflow when the trees are cut. Although the increased flows are available to water users, the increases tend to be realized during spring runoff when there is often an abundance of water. Water yield increases are also larger in wet years than in dry years. Both of these factors may limit the benefit to local water users. Some members of the public also believed that the 9B prescription was simply a justification to harvest more timber.



Water yield: always a subject of interest in the American West.

Since the 1984 *Forest Plan* was written, research has shown that water yield increases occur not only through the specific timber harvest methods specified in the 9B prescription, but through nearly all timber harvest, and can be considered a byproduct of the normal timber harvest program. For all of these reasons, the 9B prescription was considered but eliminated from the revised *Forest Plan.* However, we recognize that water yield increases are an important effect of timber harvest as well as of wildland and prescribed fire. Part Five of this *Summary* shows how the different alternatives compare in water yield increases through both timber harvest and fire.

We continue to recognize the importance of water supply as a basic goal of all National Forests, and are working, for example, with the State of Colorado to comply with 1996 amendments to the Safe Drinking Water Act to identify source areas for public water supplies. We remain responsive to requests to evaluate site-specific proposals for water facilities and are at the same time attentive to the need to maintain sufficient streamflow for threatened and endangered species both locally and in the Platte River in Nebraska.

You will want to know about two important milestones pertaining to water resources accomplished between issuance of the *DEIS* and the new *FEIS.* One is a revised *Watershed Condition Assessment* that records the health of 147 watersheds on the ARNF-PNG, with results spelled out in the *FEIS.* The second is the issuance of a *Watershed Conservation Practices Handbook* developed for the whole Rocky Mountain region. This important document, available to the public, will be officially incorporated as part of the *Forest Plan.*

PART FOUR: THE ALTERNATIVES

In sketching out the path of revision stages in Figure 3, we pointed out that an important and required function of the *FEIS* was to develop several options, or *alternatives,* for addressing each revision topic. The public was invited to comment on a set of preliminary alternatives during a series of open meetings in March and April of 1994 and to submit written comments. A newsletter about progress on the revision was also sent out to help the public consider all issues involved.

After reviewing the many submitted comments, our Interdisciplinary Team further refined the alternatives. Ten alternatives were reviewed but four were eliminated from further detailed study for simple and straightforward reasons given later in this section.

Though differing among themselves, all of the alternatives had to meet the goals and objectives of a 1992 *Rocky Mountain Regional Guide* covering such things as maintaining basic soil, air, water and land resources, management of biologically diverse ecosystems, conservation of habitat, recreational and educational opportunities, scenic quality, heritage resources, sustaining multiple uses in an environmentally acceptable manner, improving landownership and access patterns, improving financial efficiency, improving the planning and implementation of projects, improving Forest Service relations with the public and honoring the public's own diversity. You have heard most of these subjects already in this summary, but it is useful to be reminded of the strong thread of consistency that runs through all the instructions and procedures that have moved the revision process forward. It is also useful to recognize that all the alternatives, some backed by very vocal interest groups, and each promoting a different emphasis on the Forests' mix of goods and services, had to be realistic and attainable, had to meet the purposes and needs of the *Forest Plan* revision and had to address the significant issues of the revision topics. They all must--and do--embody the philosophies of multiple use and ecosystem management. They all maintain the resources of the Forests and Grassland and they all comply fully with environmental laws. The alternatives are like different teams on the same playing field, calling different plays and seeking to score points in different ways, but governed by common rules and none of them allowed to step out of bounds. No alternative, for example, can cause any plant or animal species population to be eliminated on the Forests or Grassland due to management practices.

Three other points of procedure should be kept in mind:

1. In assembling the alternatives, we were required to include a "no-action" or "no-change" alternative. Alternative A is this no-change alternative and represents the management policy of the 1984 *Forest Plan except that* it is updated to current technologies, definitions, laws, regulations, and so forth. If we were asked to drive a 1984 Ford, we'd still have to have new tires and brakes, air inspection and today's lead-free gasoline. More on Alternative A below.

2. We were also required to indicate our "preferred" alternative. The responsible official, the Regional Forester, identified Alternative B as the preferred alternative in the *DEIS* and in this *FEIS,* but that did not represent a final decision. The final choice and the basis for it are contained in the *Record of Decision.* We stress again the importance of all of the alternatives throughout the revision process, and the continuing importance of each, even after one has moved into place as the nerve center of the revised *Forest Plan.*

3. Budgets are cold hard facts of our life just as they are of yours. During the evaluation phase of the revision we found it necessary to develop two budgets for each alternative. One is the budget necessary to most fully implement the *Forest Plan* based on that alternative; the second, called the "experienced" budget, is based on actual budgets we have received in the past, generally about two-thirds of the "full" budget level. In some of the more ambitious alternatives--recreation and travel to name two examples--projects could be severely curtailed at the lower budget levels. Charts comparing the alternatives in Part Five are labeled "experienced" or "full" budget to help you distinguish between what is desirable or likely.

Alternative A

As noted less than a page ago, this alternative projects ARNF-PNG management based on the 1984 *Forest Plan* but with modernizing updates.

Theme: The philosophy behind this management was "multiple use." Since this philosophy was in place before much of the current research on biodiversity, there was little emphasis placed on managing for the "whole" ecosystem. Rather, we tried to achieve a balance between the "parts," chiefly those that were economically important. The updated Alternative A includes additional "parts" that recognize diversity standards at landscape, community and species levels. *Forestwide standards and guidelines* were updated to accomplish this.

Recreation, Commodities, and the Ecosystem: Under this alternative, ecosystems in wilderness and other protected areas would be allowed to progress through natural ecological processes, but the rest of the ARNF-PNG would be managed in a "hands-on" fashion to provide as many recreation opportunities and as much commodity production as possible, while staying within the limits of multiple-use philosophy. The mix of recreational uses would be more or less the same as in the 1984 *Plan* and access to nonwilderness areas would be controlled by very few regulations. Facilities (campgrounds, trailheads, etc.) in the poorest condition would be reconstructed.

Some portions of ARNF-PNG ecosystems would be impacted up to the limits of our standards and guidelines.

Alternative B (The Preferred Alternative)

Theme: The theme of this alternative is balance. No element of the ARNF-PNG ecosystem, including human use, would receive substantially greater emphasis than any other, although there is less commodity production than at present due to intermix areas, scenic areas, backcountry areas, Research Natural Areas, and wilderness recommendations. In this alternative we would try to create an even distribution of recreation uses and commodity activities throughout the ARNF-PNG--within the capabilities of the individual ecosystems. In this way we intend to maintain or improve biodiversity while allowing some changes in the less fragile ecosystems.

Recreation, Commodities, and the Ecosystem: In this alternative we would move toward greater natural biodiversity, but do so while continuing to support some degree of timber and grazing activity. Large blocks of Forest will remain undeveloped and unroaded; these blocks will often be adjoined by areas of development, commodity activities, and recreational use. Some ecosystems would be allowed to progress through natural ecological processes. The mix of recreational uses would be more or less the same as it is now, and access in all areas of the ARNF-PNG would be controlled and regulated. Most rundown ARNF-PNG facilities would be scheduled for reconstruction.

Alternative C

Theme: The theme of this alternative is economic stability, a stability provided by higher levels of timber harvest and other commodity activities to provide monetary returns at the local and national level. Principles of ecosystem management would be integrated into the plan, and features of the ARNF-PNG that support the tourism and recreation industries--chiefly scenery--would be safeguarded.

Recreation, Commodities, and the Ecosystem: This alternative is aimed at maximum commodity production: the highest level of timber harvest and the least restrictive oil and gas leasing regulations. Ecosystems would be managed in a "hands-on" manner, especially in commodity-producing areas. Reconstruction of facilities emphasizes additional OHV miles, more campground units and more trailhead parking to meet projected increases in use. Access outside of wilderness would be generally open and controlled by very few regulations.

Some portions of the ARNF-PNG ecosystem would be impacted up to the limits of our standards and guidelines.

Alternative E

Theme: The theme of this alternative is recreation. Many people, especially along the urban Front Range, feel that recreation should be given increasing emphasis in ARNF-PNG management. This alternative will manage for activities such as camping, auto travel, skiing, hiking, hunting, fishing, mountain bicycling, and off-highway vehicle travel, particularly by increasing the areas open to motorized backcountry travel. The most significant difference

between this alternative and the 1984 *Forest Plan* is the number of areas allocated to motorized backcountry recreation and dispersed recreation.

Recreation, Commodities, and the Ecosystem: This alternative is aimed at opening up more recreational opportunities for ARNF-PNG users. As part of the trade-off, fewer areas would remain open to commodity production--for logging, grazing, and oil and gas leasing. Ecosystems would be managed in a "hands-on" manner, attempting to encourage human use and natural ecological processes to coexist whenever possible. Nonmotorized backcountry use would continue in wilderness areas, but most other areas would be opened to motorized use. Some sensitive ecosystems would also be developed for water-recreation activities. All rundown and damaged facilities (campgrounds, picnic areas, trails and trailheads) would be scheduled for reconstruction. Access outside of wilderness areas would be open and controlled by very few regulations.

Some portions of the ARNF-PNG ecosystem would be impacted up to the limits of our standards and guidelines.

Alternative H

Theme: The theme of this alternative, conceptualized by the Colorado Environmental Coalition, is managing for natural ecological processes--protecting the greater ecosystem from the worst effects of human use and letting it evolve relatively unhindered, as is has done for countless centuries. It does so by recommending large portions of the ARNF-PNG for wilderness protection, increasing nonmotorized recreation possibilities, and protecting areas to ensure the continued existence of all native species of fish, plants, and wildlife. This alternative was developed in response to public concern that native ecosystems are best restored and maintained according to the principles of the emerging sciences of landscape ecology and conservation biology.

Recreation, Commodities, and the Ecosystem: This alternative emphasizes the importance of biodiversity and complete ecosystems, and manages all human activities in relation to protecting these processes. Large tracts of land are preserved as core reserves and wilderness areas, and are connected by corridors for wildlife travel. Human use, such as logging and recreation, is allowed where it is compatible with biological diversity. Ecosystems would be allowed to progress through natural ecological processes. Development of new campgrounds, picnic areas, resorts, etc., would be minimized and the number of miles for off-highway motorized travel would be reduced. Access in all areas of the ARNF-PNG would be controlled and regulated. Interpretive programs would emphasize minimum-impact behavior.

Alternative I

Theme: The theme of this alternative, proposed by the Ecosystem Council for Multiple Use, is human use. In it, the emphasis is placed on recreation use and commodity production, while incorporating the principles of ecosystem management. This is done by encouraging commodity production while opening up more of the ARNF-PNG to motorized travel and recreational

development. Features of the ARNF-PNG that directly and indirectly support the tourism and recreation industries--chiefly scenery--will be safeguarded.

Recreation, Commodities, and the Ecosystem: Commodity production will be at slightly lower levels than in the 1984 *Plan* because of areas managed for motorized backcountry recreation, recreational complexes, residential and Forest intermix, and scenic values. Ecosystems would be managed in a "hands-on" manner to ensure both recreation uses and a sustainable flow of commodities within the biological means of the ARNF-PNG. The recreational emphasis is on increased numbers of miles of off-highway motorized travel, trailhead parking, and campground units. Access outside of wilderness areas would be open and controlled by very few regulations.

Some portions of the ARNF-PNG ecosystem would be impacted up to the limits of our standards and guidelines.

The Missing Alternatives

The four alternatives we told you we had considered and eliminated from further detailed study were dropped because: 1) they duplicated other alternatives, 2) they were found to be unrealistic, 3) the public brought convincing arguments to delete them, and/or 4) other alternatives better addressed relevant revision topics.

The four were:

1. *The 1984 Forest Plan.* Replaced by Alternative A as the required "no-action" alternative to match the 1984 *Forest Plan's* goods and services levels, the actual 1984 *Plan* was dropped because other alternatives or other analyses adequately demonstrated the consequences of achieving the 1984 *Plan's* projections for timber, recreation, water yield and other items. Analysis had shown clearly that the 1984 *Forest Plan's* annual timber sale rate of 30 million board feet (MMBF) was not biologically sustainable. Alternatives A and C both come close to the 1984 *Plan* in lands allocated for timber, but their annual sale quantity estimates are held within biologically sustainable levels--a little over half the 30 MMBF of the 1984 *Plan.*

2. *Alternative D.* This alternative emphasized maintaining biological diversity over all other elements of the ecosystem, with little interference from humans. It was similar to Alternative H, but had fewer undeveloped areas. According to public comment, Alternative H better addressed the retention of ecosystems in their natural state.

3. *Alternative F.* This alternative sought to maintain natural or only slightly modified ecosystems by limiting uses and activities to those having low impact or by restricting activities to ecosystems with high tolerance and flexibility. This alternative was similar to Alternative B in its allocation of management prescriptions, but used the residential intermix prescription less often. Alternative B better addressed the intermix issue.

4. *Alternative G.* This alternative specified minimum management at minimum budget levels. Because the Interdisciplinary Team analyzed the effect budget has on each alternative, analyzing a minimum budget alternative would have yielded no new insights.

PART FIVE: COMPARING THE ALTERNATIVES BY ISSUE

UNDERSTANDING MANAGEMENT AREAS

Before we start comparing the alternatives by revision topic, we'll give you one more important detail on *Forest Plan* implementation.

Because National Forests and Grasslands are huge and varied areas, any number of combinations of ecosystem emphasis, travel and recreation restrictions, and commodity production regulations could be prescribed to manage individual sections. To clarify this process, the Forest Service has drawn up a list of different management prescriptions to be applied to sections of Forests or Grassland as the creators of each forest plan see fit.

These prescriptions are called *management areas* and we have touched upon them already in describing the ways in which the revised *Forest Plan* responds to a number of revision topics. Management areas are closely analogous to zones and zoning ordinances in city and county land-use plans--residential, commercial, mixed residential-commercial, industrial, open space, and so forth. The ARNF-PNG uses a total of 26 management areas divided into eight categories which are the same categories used by the Forest Service throughout the Rocky Mountain Region. They range from almost totally natural conditions at the low end of the scale (1.1 wilderness) to extensive use by humans near the other end of the scale (8.22 ski-based resorts.) Tables 1 and 2 give you a listing of all the management areas.

Most of the management differences between alternatives are a result of how the alternatives assign management areas. One alternative, for instance, could assign a greater share of ARNF-PNG land to 5.5 (Dispersed Recreation--Forest Products), where another puts the same area in a combination of 4.3 (Dispersed Recreation) and 1.41 (Core Habitats--Existing). Figure 4 illustrates an example for part of the Redfeather Ranger District called the Deadman Geographic Area. You can see on the figure that the *same* geographic area has been *zoned differently* for two different alternatives by assigning different management areas. That means that any given point on the Forests and Grassland may differ--depending on the alternative--in the amount of timber that can be cut, recreational opportunities offered or not offered, the degree of consideration given to natural processes, amount of grazing, and so forth. Applied all across the ARNF-PNG, the assignment of different management areas results in significantly different *Forest Plans* for each alternative. All, of course, remain within the limits and rules we have stressed already.

The maps included with this *Summary* include only the set for the Preferred Alternative (Alternative B) and show the management area prescription allocated to all areas of the ARNF-PNG. (No other alternatives had substantial changes and their maps did not require reprinting.) The Alternative B map set will provide you with a very handy quick-reference guide to which you will probably want to refer often.

Tables 1 and 2 list the management area acres by alternative.

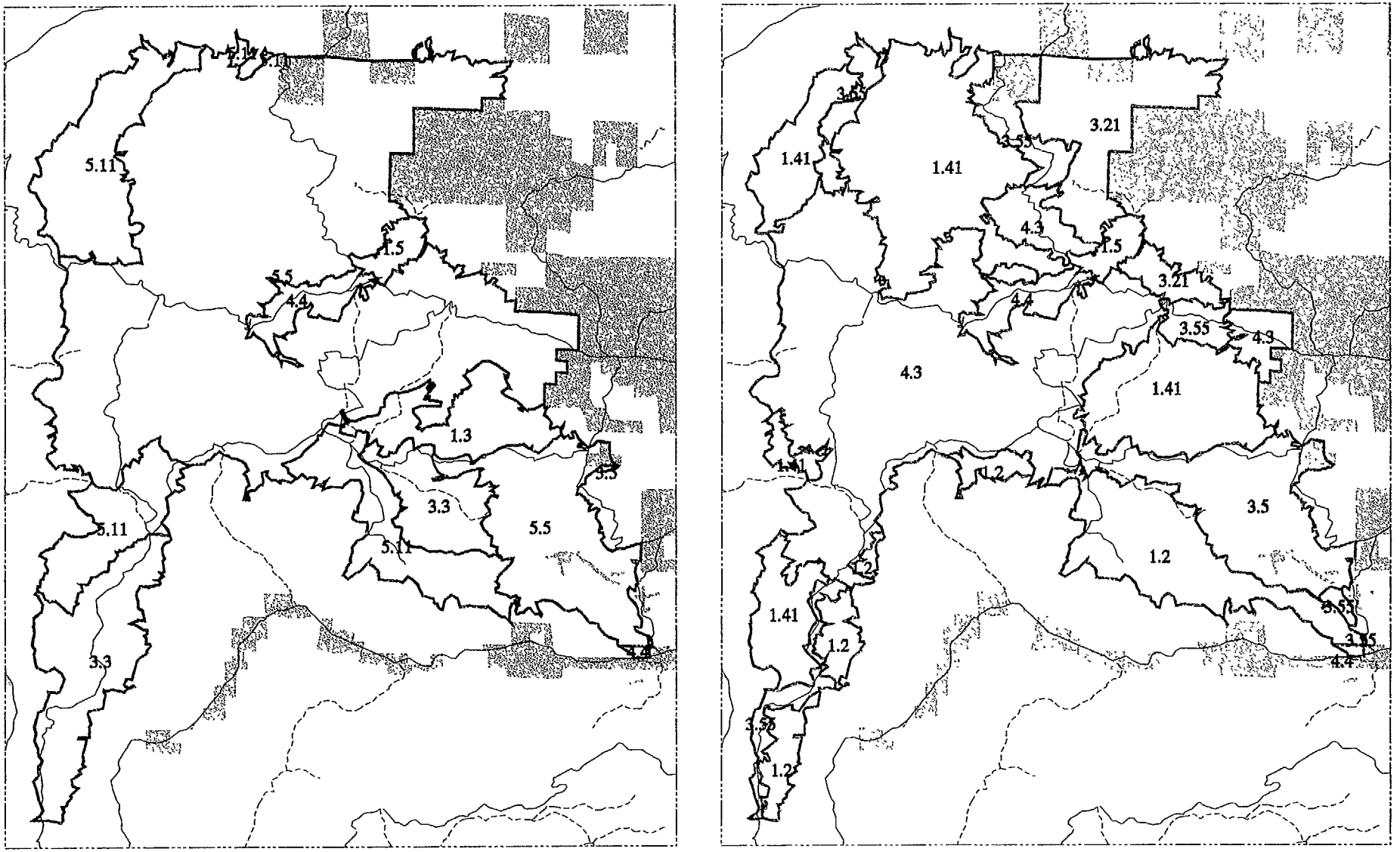


Figure 4
The Deadman Geographic Area allocated to different management areas under different alternatives.

Table 1 Management Area Allocations for the Revision, ARNF, 1995

Management Area [a]	Alternatives					
	A	B	C	E	H	I
1.1 Wilderness	295,733	295,773	295,733	295,733	295,733	295,733
1.2 Recom. Wilderness	0	8,810	0	0	259,363	0
1.3 Backcountry Rec.	136,376	131,184	58,353	120,773	23,850	0
1.41 Core Areas-existing	0	9,065	0	0	152,762	0
1.42 Core Areas-restor.	0	0	0	0	31,338	0
1.5 Wild Rivers	151	3,272	151	12,026	3,272	151
2.2 Research Natural Areas[b]	154	11,285	154	154	0	0
3.1 Special Interest Areas	46,463	74,828	46,942	47,451	0	6,285
3.21 Limited Use Areas	0	0	0	0	114,512	0
3.3 Backcountry Rec.-mtr.	36,428	29,911	23,293	210,827	47,112	114,296
3.5 Flora and Fauna	311,734	332,554	171,316	68,373	50,627	171,876
3.55 Corridors	0	0	0	0	57,741	0
4.2 Scenery	0	30,129	29,457	29,590	0	28,204
4.3 Dispersed Rec.	175,918	107,478	62,868	318,011	90,208	56,489
4.4 Recreation Rivers	17,076	18,912	17,076	18,913	18,913	17,075
5.1Gen. For. and Range	70,272	21,511	212,670	0	25,898	246,708
5.13 Forest Products	152,600	9,227	234,569	0	0	243,658
5.31 Fraser Exp. Forest	22,501	22,501	22,501	22,501	22,501	22,501
5.5 Disp Rec.-Forest Prod.	0	135,038	62,003	94,312	0	21,177

Management Area [a]	Alternatives					
	A	B	C	E	H	I
7.1 Intermix	0	27,032	25,766	25,766	70,706	24,046
8.21 Dev. Rec. Complexes	1,958	3,213	3,653	4,271	15,415	18,708
8.22 Ski-based Resorts	21,685	16,527	21,544	20,349	9,101	22,142
TOTAL	1,289,050	1,289,050	1,289,050	1,289,050	1,289,050	1,289,050

[a] Management Area 8.3 (Designated Utility Corridors) is shown in Figure 3.26 in Chapter Three of the *FEIS* but is not included in this table because corridors are linear features crossing other management areas.
[b] Alternatives B and H also have 37,764 and 73,231 acres, respectively, within other management areas.

Table 2 Management Area Allocations for the Revision, PNG, 1995

Management Area[a]	Alternatives					
	A	B	C	E	H	I
2.2 Research Natural Areas[b]	0	2,578	644	788	13,870	256
3.1 Special Interest Areas	763	9,526	2,150	2,150	2,150	2,150
3.21 Limited Use Areas	0	0	0	0	73,177	0
3.61 Prairie Woodland	863	1,339	0	1,339	1,339	0
4.2 Scenery	4,862	4,920	4,920	4,920	4,920	4,920
4.3 Dispersed Recreation	0	345	600	15,171	0	600
6.4Mid-Comp. High Structure, Native Short-grass Prairie	0	51,209	0	0	35,365	0
6.6Mid-Comp. Low Structure, Grassland Resource Production	185,941	122,511	184,113	168,060	61,608	184,501
8.21 Dev. Rec. Complex	121	121	121	121	121	121
TOTAL	192,548	192,548	192,548	192,548	192,548	192,548

[a] Management Area 8.3 (Designated Utility Corridors) is shown in Figure 3.27 in Chapter Three of the *FEIS* but is not included in this table because corridors are linear features crossing other management areas.
[b] Alternatives B and H also have 37,764 and 73,231 acres, respectively, within their management areas.

A COMPARISON OF ALTERNATIVES BY REVISION TOPIC

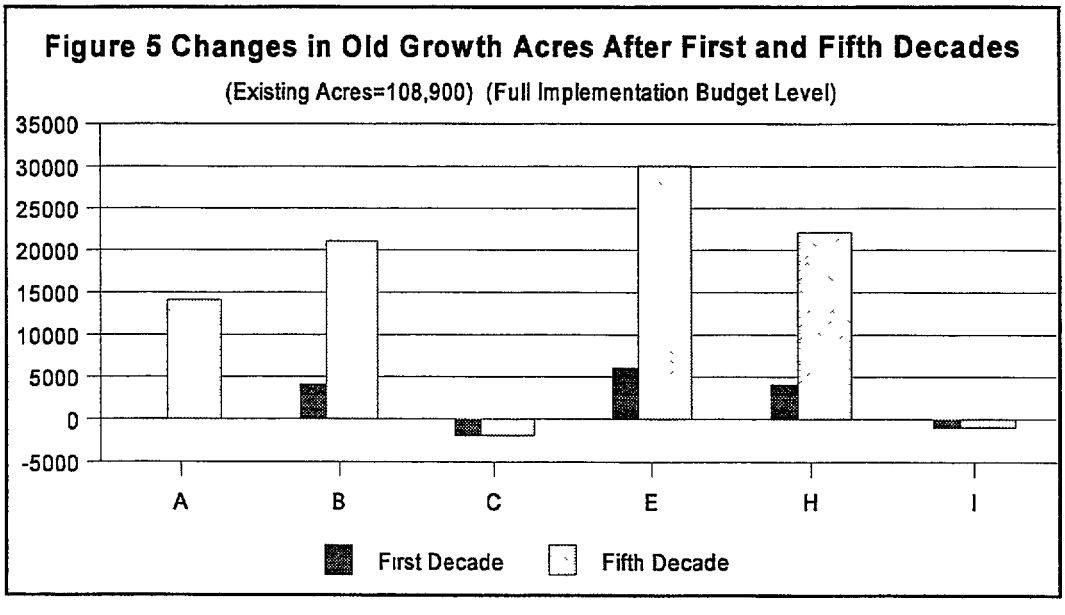
BIOLOGICAL DIVERSITY

In the forests, biological diversity is most affected by any alteration in the composition, pattern, and structure of the vegetation--in other words, how many of which species of trees, shrubs, and grasses grow there, how the species are distributed, and what levels of maturation those species are at. Three factors influence the vegetation in the ARNF-PNG most strongly: fire, insects and disease, and logging. Here, along with biodiversity, we'll discuss fire and insects and disease. Logging will be discussed in its own revision topic. Related maps are Old Growth, Habitat Effectiveness, Range Suitability, and so on.

Biodiversity: Managing for biodiversity means managing the ARNF-PNG to maintain a diversity of 1) communities of plants and animals, 2) individual species of plants and animals, 3) different genes within the species, and 4) the thousands of different ways individual organisms interact with one another and their environments.

Biodiversity is a complex issue: opinions differ on how it should be maintained. As mentioned, the key to understanding biodiversity in the ARNF-PNG lies in the makeup of the Forests and the Grassland. How the different alternatives handle the question of Forest and Grassland structure, i.e., how much old growth will be allowed to remain in each alternative, can be instructive in revealing their different biodiversity philosophies. Figure 5 displays the difference between existing acres of old growth (108,900) and the acres of old growth remaining after 10 years and after 50 years. Some alternatives result in increases and others result in slight decreases through time.

Figure 5 Changes in Old Growth Acres After First and Fifth Decades



Another measure of biological diversity is habitat effectiveness. Effective habitat is habitat largely undisturbed by roads and trails whether motorized or nonmotorized. Numerous species can be easily disturbed by human activities, at least during certain times of the year, and as a result cannot effectively use otherwise available habitat. Effective habitat is estimated to exist on about 67 percent of the ARNF; the 33 percent that is not effective habitat is primarily the result of use of travelways by motorized vehicles (26 percent) and nonmotorized users (8 percent). Here, then, we have a good example of how one activity or value--travel--influences another--wildlife habitat. Data in the *FEIS* show that at the experienced budget level Alternatives A, C, E, and I increase the travelway miles somewhat and reduce the percentage of habitat effectiveness by 1 to 3 percent. Alternatives B and H decrease overall travelway miles somewhat, raising habitat effectiveness 4 to 6 percent.

Alternatives A, C, and I take the approach that humans can maintain biological diversity and approximate natural processes such as fire and insect and disease infestations by means of timber harvesting, livestock grazing, etc. Alternative H takes an ecosystem preservation approach, relying on the processes of fire and insect and disease infestations to maintain biodiversity. Alternative B holds a position somewhere between these two perspectives by relying on a mixture of all elements. Alternative E, because it focuses primarily on recreation use, relies on natural processes.

Fire: In the ecosystems that make up the ARNF-PNG, naturally occurring fires were a regular phenomenon, thinning trees, removing dead wood and thick ground cover, allowing a new crop of trees to sprout, and generally rejuvenating the ecosystems. As such, it greatly affected biodiversity.

Human interference with these fire cycles can and has led to increased insect infestation and a buildup of dead wood--a condition that could contribute to fires of an unusually destructive nature in the future. There are currently two ways of relieving this situation: logging and prescribed fire (reintroducing fire into the ecosystems by means of controlled fires).

Logging and prescribed fire have advantages and disadvantages when looked at from both an ecological and economic viewpoint. Logging thins a forest and provides timber products for the community, but impacts the forest with roads and machinery and produces a landscape that is not completely analogous with a naturally burned area. Prescribed fire more closely mimics nature's processes.

Alternatives C, A, I and B in that order, provide the most timber harvest in the ARNF-PNG. Alternatives E and H provide for little logging. (See Figures 10 and 11 in the Timber-Related Issues discussion.) Alternative B provides the most prescribed fire, closely followed by H, then by A, and, in lowest position with equal amounts, C, E, and I.

We should note, however, that here is a good example of how budgets affect the process, since both the experienced and full budget levels fall seriously short of the amount of prescribed fire that would be needed to bring and maintain fuel levels in the Forests to their natural condition.

Still unnaturally loaded with fuels, ecosystems will therefore continue to experience larger and more severe fires that will threaten ecological values.

Insects and disease: Like fire, insect infestations and disease outbreaks can alter the makeup of the Forests, thus altering biodiversity. Both have existed historically in the ARNF-PNG and will continue to do so.

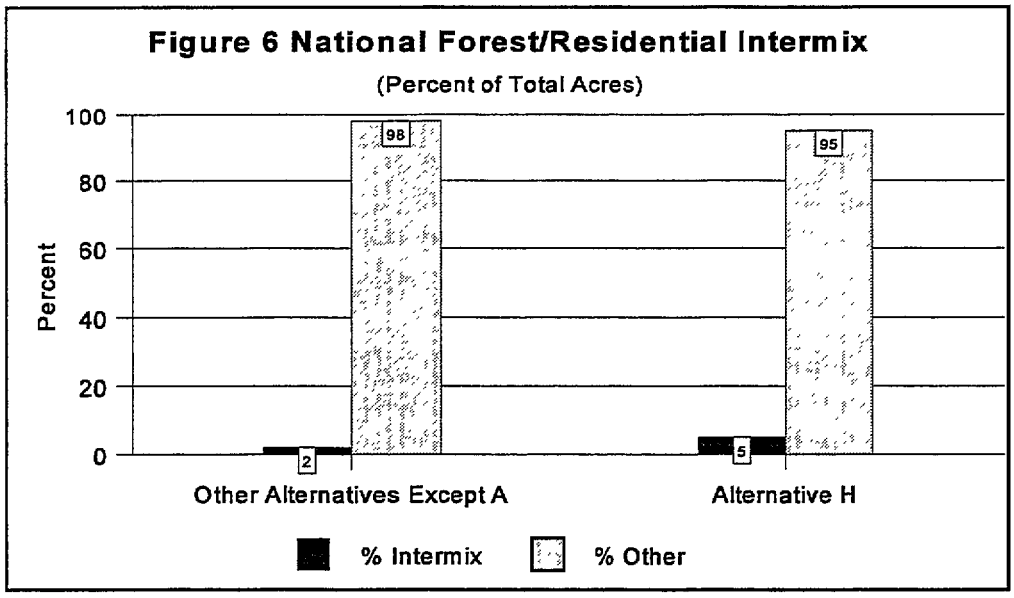
As a part of the natural course of events, the more mature the vegetation in a Forest becomes, the more susceptible it is to insect infestation and disease. While direct treatment of vegetation against insects and disease is impractical on the scale necessary for the ARNF-PNG, timber and fire management can have an effect on insects and disease. Both logging and fire create more variation in the makeup of the Forests, and thus maintain insect infestation and disease outbreaks in vegetation at endemic levels.

Alternatives C, A, I, and B, in that order, would have the most positive effect on maintaining insects and diseases at endemic levels because they harvest the most acres at both budget levels. Alternatives E and H have little if any effect on the natural course of action of insects and disease through timber harvest. Roughly the same number of acres will be treated by prescribed fire for each alternative to combat insects and disease. But as already noted, the budget limitations for applying prescribed fire will limit its use generally and thus also its effectiveness as a tool in maintaining forest health.

NATIONAL FOREST AND RESIDENTIAL INTERMIX

The intermix topic addresses situations where private homes and lands close to or within National Forest boundaries strongly affect the management of the Forests and Grassland. During the revision process we received many comments regarding management of the intermix, especially with regard to wildfire, safety, trespass and threats to scenic quality. As noted earlier, that led to adoption of the subject as a revision topic and to the creation of a management area prescription called National Forest/Residential Intermix (Management area 7.1) in the *Forest Plan*. Lands allocated to this management area are managed to protect natural resources, protect compatible multiple uses, reduce the potential for catastrophic wildfire and maintain good relationships between land owners and other governments with jurisdiction. The actual assignment of lands to the intermix management area, however, differs by alternative.

Alternative H, by a wide margin, allocates the most acres to the intermix, followed by Alternative B, which concentrates on the areas of most intense conflict and development. Alternatives C, E, and I closely resemble Alternative B in total acres. Alternative A, however, does not allocate any land to the intermix prescription because it was developed before the intermix management area existed. It therefore does not specifically acknowledge or address public concerns about the intermix or put any special emphasis on related issues such as fuel reduction and landownership consolidation.

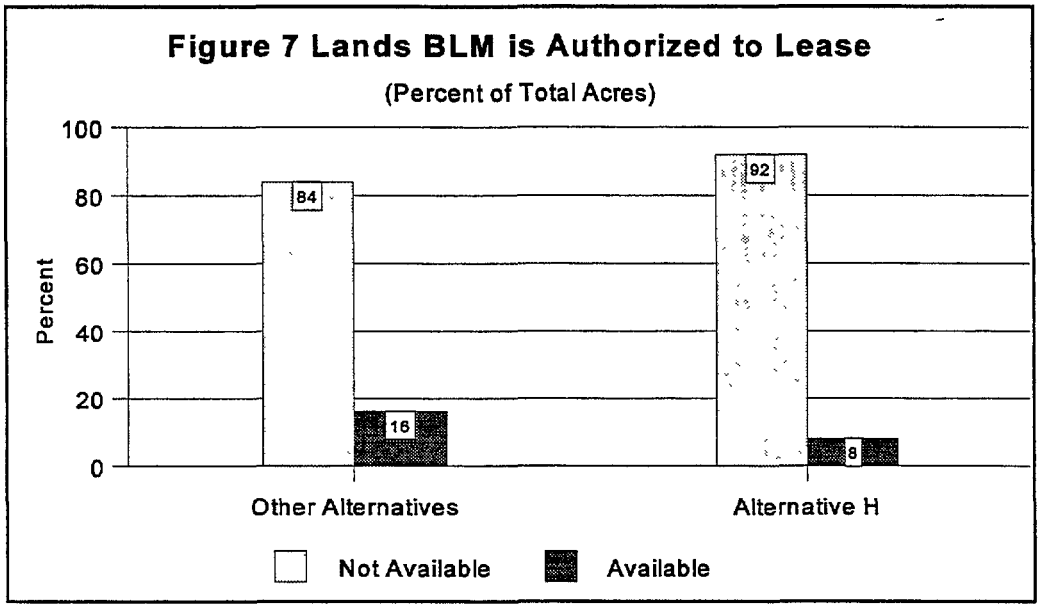


Most of the intermix prescriptions are in the southern half of the Forests in areas consisting of heavy amounts of mineral survey fractions intermingled with private lands. Alternatives B, C, E, and I differ greatly in how they treat land next to intermix areas. Alternative B allocates such lands to wildlife habitat and recreation. Alternatives C and I allocate such bordering lands to logging and recreation. Alternative E allocates these lands to fairly heavy recreation use.

OIL AND GAS LEASING

Oil and gas leasing is permitted on National Forest lands, subject to various Forest guidelines and restrictions on the lease. Oil and gas activities in the ARNF-PNG provide economic benefits, but are viewed by some as carrying with them ecological and scenic disadvantages.

Alternatives A and I authorize the most acres on the Grassland (134,308) followed by B, C, and E at 131,569 and H at 121,620, or 90 percent of the highest amount. All of the alternatives except H authorize an additional 103,309 acres in the Sulphur and Redfeather Ranger Districts in the mountains; Alternative H authorizes none there. Figure 7 shows the percentage of total ARNF-PNG acres available for leasing. There are also differences between the alternatives in leasing stipulations; H is most restrictive, Alternatives A, C, and I least restrictive, and Alternatives E and B in between. The oil and gas leasing map included in the map packet gives further details.



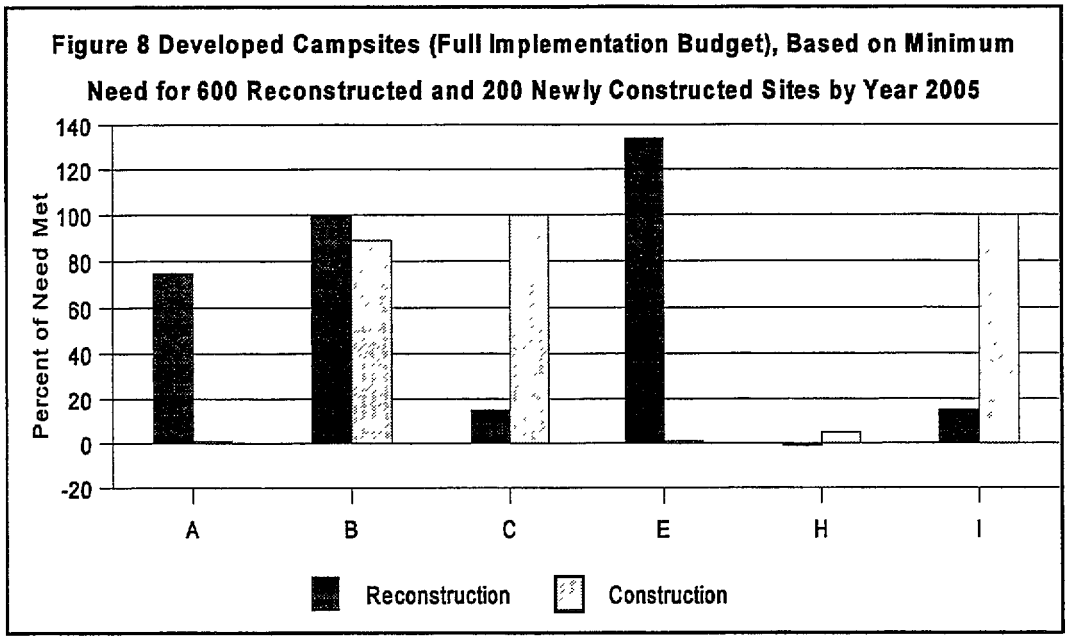
RECREATION ISSUES

As you remember from Part Three, all issues of recreation management fall into one of five categories: *Developed Recreation, Dispersed Recreation, Recreation Settings, Scenic Resources, and Wild and Scenic Rivers.* These same categories will be useful in understanding how the alternatives compare with each other in terms of recreation. The related maps included with the map packet are Recreation Opportunity Spectrum, Visual Quality Objectives, and Management Area Maps.

(Note: All the comparisons of alternatives in recreation are based on the highest funding level. But based on experienced funding, there would be fewer facilities constructed.)

Developed Recreation: Many developed recreation facilities are already overburdened by the increased use, and restricted budgets have not allowed us to keep up with maintenance demands on these facilities. Figure 8 shows the degree to which the various alternatives meet the projected needs for new and reconstructed campsites, with picnic sites following a similar pattern.

By a large margin, in a fully implemented budget, Alternative E devotes the most resources to developed recreation facilities, followed at a distance by Alternative B. Alternatives C and I devote somewhat less than B. Alternative A would put almost all of its resources into rebuilding existing facilities; Alternative H devotes the fewest resources to developed recreation in general.



Dispersed Recreation: Dispersed recreation includes all recreation outside of the developed areas. Most of the management expenses for dispersed recreation go toward maintenance and construction of trails, trailhead parking areas, and designated backcountry campsites. Alternatives E and H would construct by far the most dispersed sites, followed by Alternative B at less than half their amounts, A at only half of B's portion and Alternatives C and I with very few sites constructed. Trailhead vehicle capacity construction, on the other hand, would be similar for all alternatives with A, C, H and I constructing 300, B constructing 380 and E constructing 390. At experienced budget levels the picture remains the same for some alternatives and different for others. Alternatives A, C, H and I hold the same numbers of dispersed sites while B drops from 300 to zero and E from 705 to zero. Similarly, trailhead vehicle capacity remains the same for A, C, H, and I, but drops from 380 to zero and 390 to zero in B and E. Here we see strong evidence that the priorities of the alternatives shift in different ways in the face of budget realities.

Recreation Settings: By dividing up recreation management for each section of the ARNF-PNG into one of six different settings--primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, roaded modified, and rural--each alternative reveals its particular emphasis.

On a spectrum ranging from what we shall call modified (occasional human interaction, visible human impact, and motorized access) to a primitive setting (few humans, no visible impact, no motorized access), Alternatives C and A most strongly emphasize the modified end of the spectrum; Alternatives I, B and E--in descending order--reside in the middle of the spectrum; with Alternative H strongly emphasizing the primitive end of the spectrum.

Scenic Resources: This category addresses the amount of change in the natural scenery--due to human activity--we are willing to accept. In the ARNF-PNG, scenery is most often changed by logging activities, road construction, mining, the building of structures, and prescribed fire.

VQOs (visual quality objectives) are the tools we use to define and regulate questions of human impact on the scenery, and they include five categories, ranging from preservation (no change of scenery) to maximum modification (the greatest amount of visual change allowable). As with recreation settings, how the VQOs are allotted by the various alternatives reveals their particular emphases.

The way the VQOs function is that each of the 26 management areas is assigned an overall "predominant VQO" that must be adhered to most of the time over most of the area, with secondary VQOs assigned to cover some specific on-the-ground situations that may require a more or less restrictive VQO. Since the alternatives differ in how they divide up the ARNF-PNG's geographic areas into management areas, the VQOs for specific sites will differ as well. Readers interested in the VQO for a particular place can consult the management area maps for each alternative.

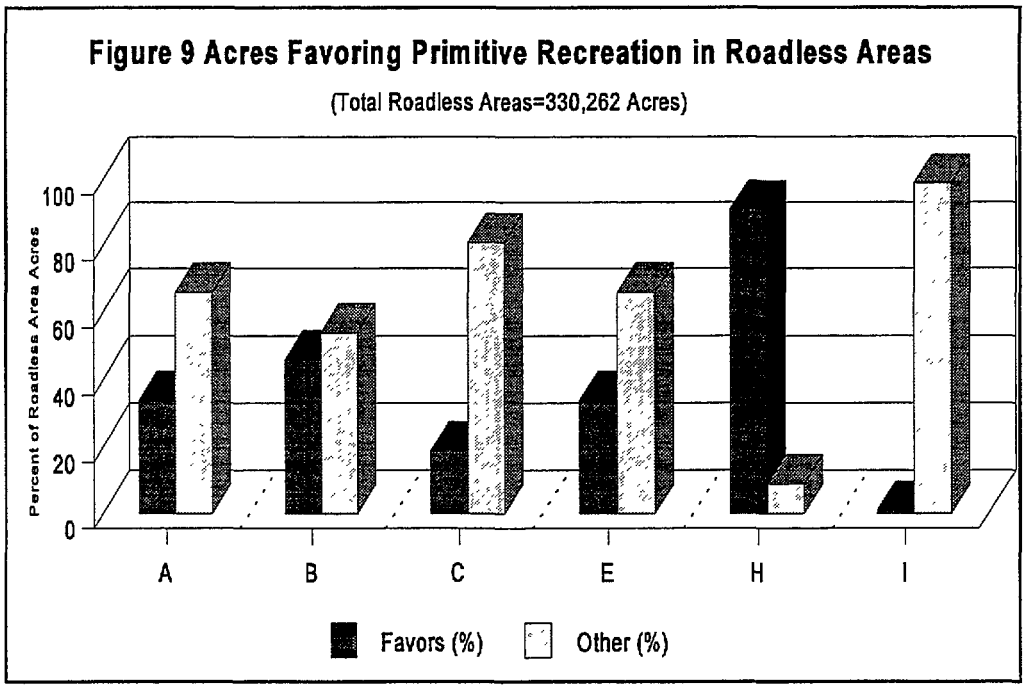
From tolerating the most human change in ARNF-PNG scenery to tolerating the least change in ARNF-PNG scenery, the alternatives, in order, are Alternatives C, A, I, B, E, and H, with C tolerating the most change and H tolerating the least. In advocating preservation of scenic quality Alternative H is twice as high as any other alternative, followed in order by B, E, A and C together, and I.

Wild and Scenic Rivers: There are three different classifications in the National Wild and Scenic Rivers System: 1) *wild,* 2) *scenic,* and 3) *recreational.* A recommendation for *wild designation* effectively ends any possibility of damming or diverting the river, as well as any mineral leasing, logging, or construction possibilities around the river. A recommendation for *recreational designation* would allow for some logging, commodity, and recreational activities, but no future damming or water diversion. None of the alternatives suggested any *scenic river designations.*

Alternatives B, E, and H all recommended 18 miles of wild river and 12 miles of recreational river on the North Fork of the Cache la Poudre River for inclusion in the national system, while Alternatives A, C and I did not recommend any miles for inclusion in the system.

INVENTORIED ROADLESS AREAS

We are required by law to inventory and evaluate all roadless areas in the ARNF-PNG for possible recommendation as wilderness. The Forest evaluated 330,230 acres in 38 roadless areas, and each alternative divided those acres for assignment to various management areas. Alternatives A, C, E, and I recommended no acres for wilderness, B recommended 8,551 acres, and H recommended a large amount, 226,154 acres. One way to compare the alternatives is on the basis of how many acres of the ARNF-PNG's existing roadless areas will remain in an



unroaded, nonmotorized state, with no commodity production activity. Among the alternatives that recommend no acreage for wilderness, the largest number of acres in Alternative A goes to backcountry recreation, in C to forest products but with substantial amounts to backcountry recreation as well, E to backcountry motorized recreation, but with almost as many acres to nonmotorized backcountry recreation, and I has its largest categories split evenly between backcountry motorized recreation and general forest and rangeland goods and services.

The amount of area that is likely to remain undeveloped and primitive in character varies greatly by alternative. Management areas 1.1, Wilderness; 1.2, Recommended for Wilderness; 1.3, Backcountry Recreation; 1.41, Core Habitats; 1.42, Core Restoration; 1.5, Wild Rivers; 2.2, Limited Use Areas; and 3.55, Corridors favor providing opportunities for solitude and unconfined primitive recreation. Figure 9 shows the percentage of roadless area acres that are in management areas that favor primitive recreation and the percentage of acres in other management areas.

TIMBER-RELATED ISSUES

Some people feel the best path to biological diversity and forest health can be achieved by eliminating or severely restricting timber harvest. Others feel the best way to maintain biological diversity and forest health is to use timber harvesting as a tool.

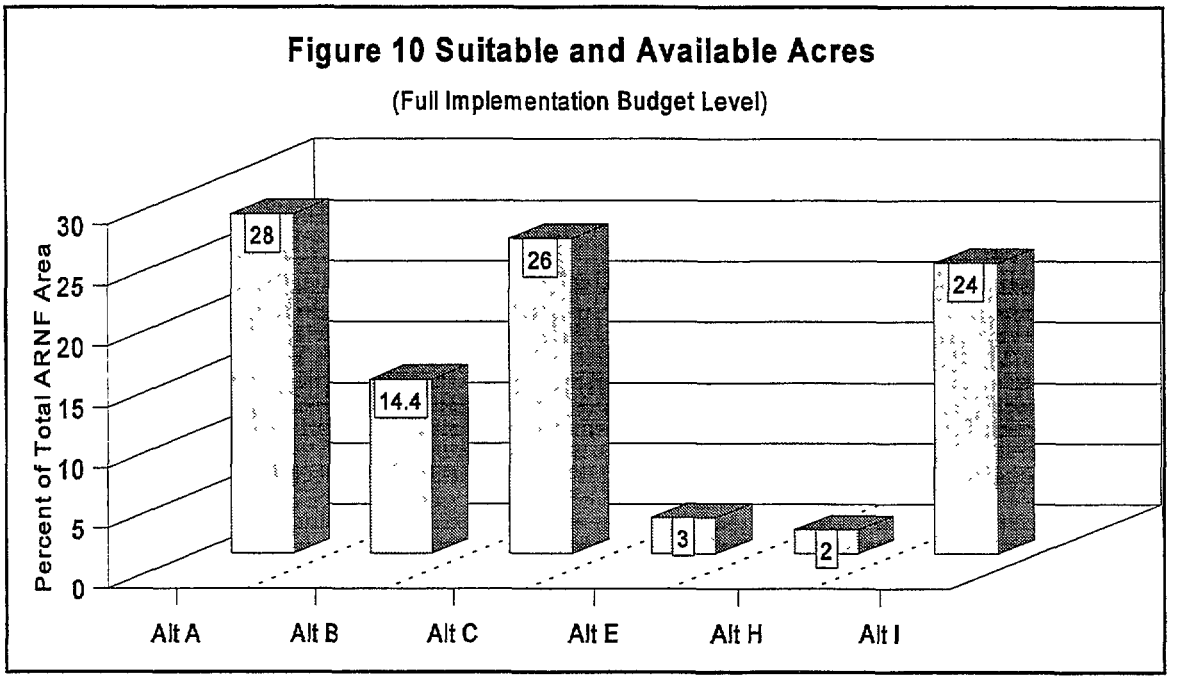
Timber harvesting can be useful for managing biodiversity, insect infestations, tree growth, recreation, wildlife habitat, and fire control. Timber harvesting also provides wood products and economic benefits. On the other hand, timber harvesting can negatively affect recreational

experiences, scenic values, wildlife habitat, and water quality. Although logging has historically been an important industry in the ARNF-PNG, these days the ARNF-PNG plays a relatively minor role in state timber production.

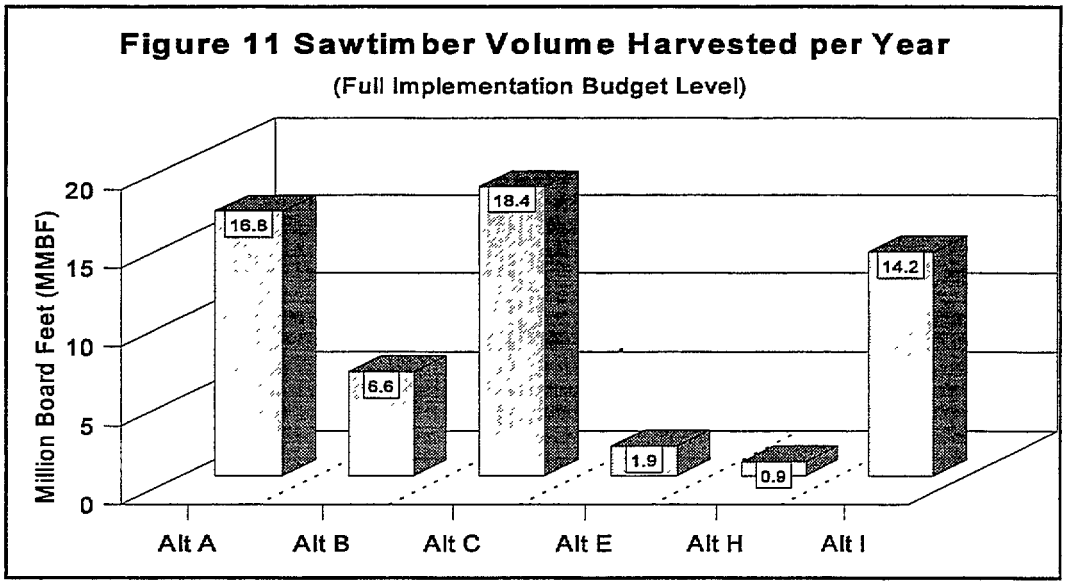
When considering timber issues, the best way to compare alternatives is to examine the amount of acreage judged "suitable" for harvest in each alternative. This will give you an idea of how much of the ARNF-PNG could be opened up to logging. Then compare the amount of timber that will be offered for sale in each alternative, the "Allowable Sale Quantity," or ASQ.

Figure 10 Suitable and Available Acres

(Full Implementation Budget Level)



In the case of ARNF-PNG, both comparisons give almost the same results. The exception is that in suitable acres Alternative A offers the most, with Alternative C ranking second, while in ASQ Alternative C produces the most, and Alternative A comes in second. All the others maintain the same relative ranking in both categories. In terms of acreage available to logging *and* amount of timber produced, Alternative I ranks third, followed in descending order by Alternatives B, E, and H. In other words, Alternatives A and C are most favorable to timber production, followed by I, B, E, and H. Refer to the Timber Suitability map (for the Preferred Alternative included in the map packet).



TRAVEL MANAGEMENT

Travel management includes coordinating travel throughout the Forests and Grassland on all paved roads, gravel roads, primitive roads, designated trails, and trails over snow in the ARNF-PNG.

All travel management decisions involve trade-offs. For example, closing an area to motorized travel affects not just off-highway vehicle enthusiasts, but hunters, firewood gatherers, snowmobilers, and people with disabilities, among others. On the other hand, closing the area might protect wildlife and increase solitude and appreciation of the outdoor experience for hikers, crosscountry skiers, and wildlife viewers.

Although there are many aspects to travel management, a comparison of motorized and nonmotorized travel miles reveals something of the philosophy behind each alternative. When ranked from most miles of roads and travelways for motorized travel to least miles for motorized travel (based on estimated typical budget levels), the alternatives stack up as follows: B, I, C, E, A and H, with Alternative B designating the most motorized miles and Alternative H designating the least. Refer to the Motorized Recreation Opportunity Map included in the map packet.

In the near future the ARNF-PNG will begin designating OHV routes as open to OHV travel to clearly communicate intended uses and to improve management of the OHV system. In the new *Forest Plan* each geographic area is analyzed for the combination of travel uses it can support.

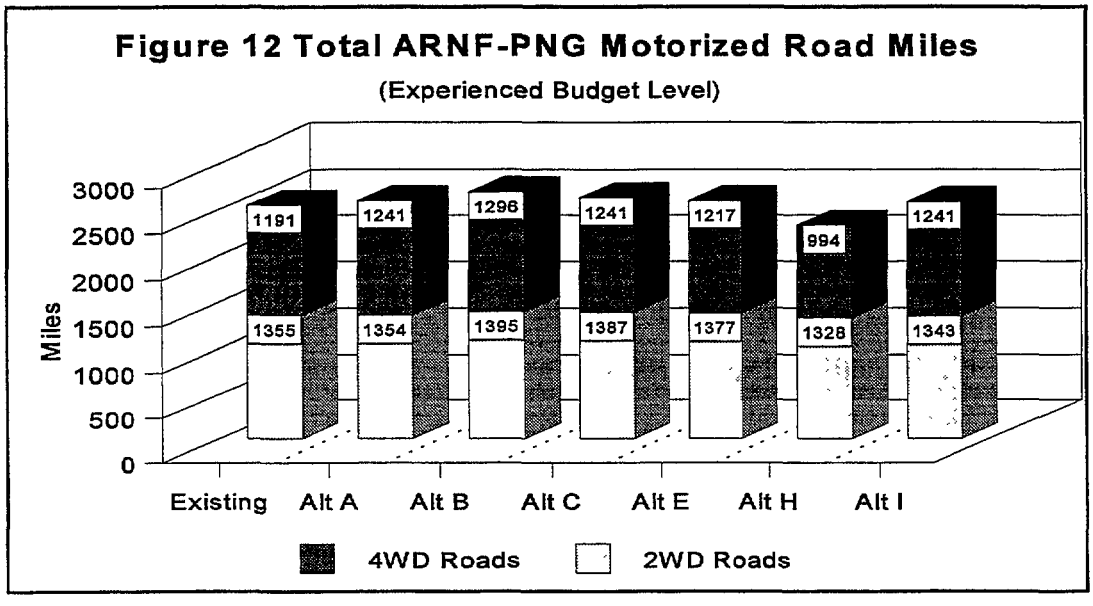


Figure 12 shows the total motorized miles available on the ARNF-PNG. These are divided by roads that are usable by two-wheel drive vehicles and those generally requiring four-wheel drive vehicles.

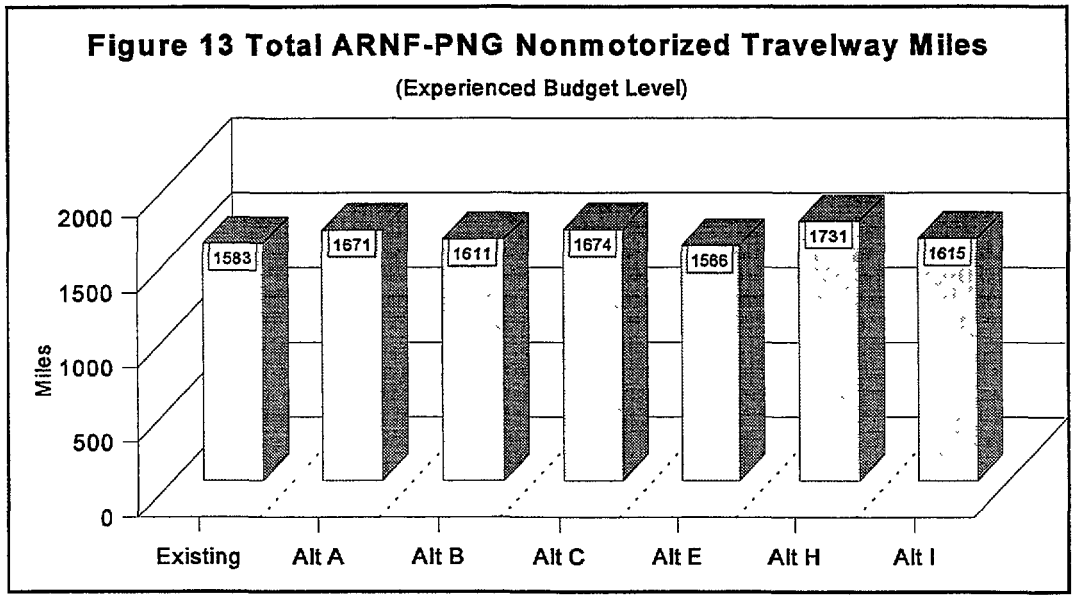


Figure 13 shows the total nonmotorized travelway miles available on either trails or closed roads on the ARNF-PNG. Ranked from most miles of nonmotorized travelways to least miles of nonmotorized travelways (again at experienced budget levels), the alternatives rank as follows: H, C, A, I, B, E.

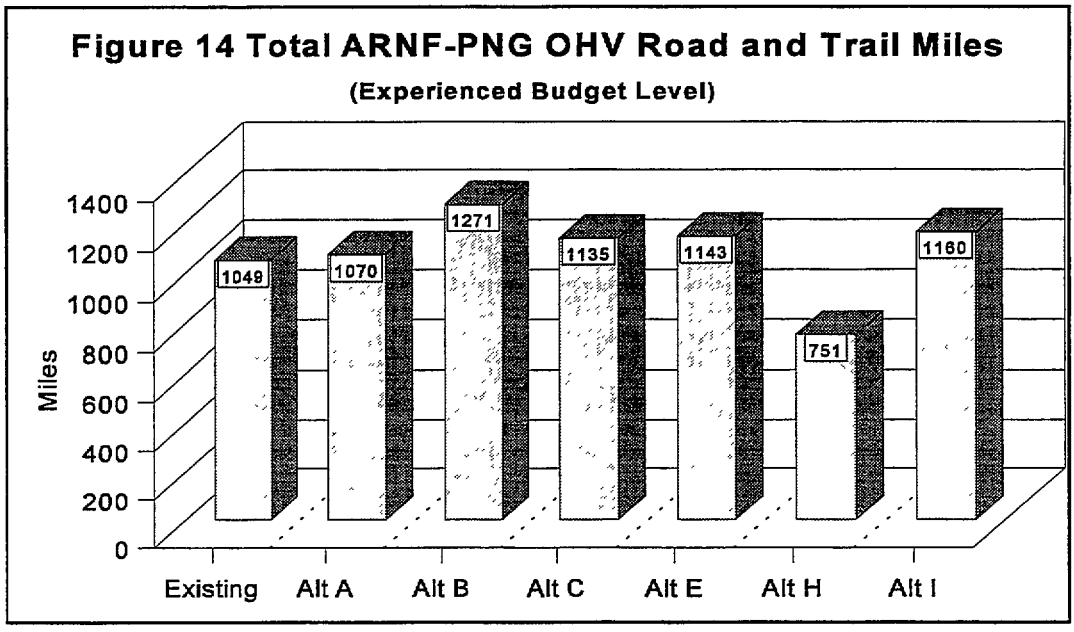


Figure 14 shows the total Off-Highway Vehicle (OHV) miles available on either roads or trails on the ARNF-PNG.

INSTREAM FLOWS AND WATER YIELD

The critical issues of ARNF-PNG water management involve 1) supplying the needs of a growing population for plentiful and readily available water, 2) maintaining the quality of that water supply through careful management, and 3) keeping a sufficient year-round supply of water in area watercourses to maintain the aquatic and riparian life that exists there.

The current total annual water yield from the Forests is about 2 million acre feet. Since, as noted earlier, removal of trees can increase water available for streamflow, the two main forest management activities which influence water yield are timber harvest and prescribed fire. The combined ranking for total water yield from timber harvest and fire is C, A, I, B, H, and E, with Alternative B, the Preferred Alternative, yielding 2,391 acre feet per year. The highest yield of 3,662 acre feet per year in Alternative C represents an addition to the Forests' total annual water yield of just under two-tenths of one percent.

Activities that most affect water quality and aquatic and riparian habitats are those that disturb the soil around watercourses. These activities include--among others--logging, road development, and grazing. One means of comparing the alternatives is on the basis of their allotments for such activities.

On the basis of logging, from the alternative with the greatest potential to negatively impact water quality to that with the least, the listing would read: Alternative C, A, I, B, E, and H. On the basis of road development, Alternatives B and H have the least impact on water quality, Alternatives A and I fall in the middle, and Alternatives E and C have the greatest impact. The ranking for effects of grazing on water quality is, from greatest to least, I, A, C, B, E, H.

PART SIX: PARTNERS INTO THE FUTURE

Now that we've come this far together, we want you to stay involved as our partners. Your knowledge, values, opinions and concerns will remain as important as ever as we begin to implement the new *Forest Plan.*

In fact, the *Forest Plan* is specifically designed for your continued involvement through two important principles: *staged decision making* and *monitoring and evaluation.* The *Forest Plan* is a *programmatic document,* establishing overall management policy and direction, and even the principles that govern our daily work. It does not, however, make decisions for individual site-specific projects. Staged decision making means that to carry out a project at some location on the Forests or Grassland, we must make judgements and decisions based on specific aims of the project, and on actual conditions at the planned project site. That includes environmental assessments for that particular site and activity. The *FEIS* is also a programmatic document, following the principle of staged decision making. The wealth of science it contains must be applied on a case-by-case basis for decisions about particular projects.

If a project or activity is planned for any area of interest to you, we encourage you to express your ideas about it. You may be happy for plans about a new picnic area, or, driving a certain stretch of road every day, you may tell us that a picnic area a few miles down the road is full only one day a month or that the planned site is so windy the wrappers will be blown right off the hotdogs.

Our pledge is to *not* be stingy in disclosing our plans. You will not wake up some morning to find all the trees gone from around your mountain home or the view from your ranchette east of Greeley suddenly full of oil rigs. If you have any concerns or sensitivities about any area of the ARNF-PNG, bone up on the parts of the *Forest Plan* that apply to it, learn what geographic area it is in--clearly spelled out in the *Plan*--and what management area it is in within that geographic area--also shown clearly in the *Forest Plan.* Learn what defines the activities in that particular management area and ask the folks at the Ranger District for that area what projects, if any, are planned, what kinds of travel are planned or currently allowed, and so forth. The Forest's NEPA Calendar, updated each quarter, lists all expected projects requiring NEPA (National Environmental Policy Act) analysis during the next three months. You can receive the calendar by calling our NEPA coordinator and asking to be put on the mailing list. In addition to responding to concerns and complaints, we also like positive encouragement and positive feedback. Let us know about what you *do* like as well as what you *don't* like.

Monitoring and evaluation is a more formal process and is discussed in Chapter Four of the *Forest Plan.* Its purpose is to provide a constant feedback mechanism to measure how well the *Plan* is doing its job and to keep the *Plan* a dynamic and responsive instrument for realizing its own goals, meeting new Congressional mandates, and meeting the needs of various user groups.

A special team of experts within the ARNF-PNG will keep constantly abreast of how well the *Forest Plan's* goals and objectives are being met and will compile an *Annual Monitoring and*

Evaluation Report. Part of the team's data gathering will consist of surveys or other methods to determine public perceptions of how successfully the Forests and Grassland are meeting their goals. Can any changes in procedures or management practices improve our achievement of those goals? You can help us decide.

Many projects, furthermore, will need or greatly benefit from partnerships between the Forest Service and user groups. Would your outing club like to see some trail marked with blue diamonds for winter ski and snowshoe travel or orange diamonds on a snowmobile route? Let's get together and work on it. Collaboration between your birding organization and our biologists to see how an endangered bird species is faring? Let's talk. Recreational groups, environmental groups, commercial interests, and all sorts of other interests--you're all, in our terminology, "stakeholders" in the use and welfare of the Forests and Grassland. Some examples: The Poudre Wilderness Volunteers donate a few weekends in the summer to hike the four wildernesses in the Poudre River drainage, educating the public on wilderness ethics, and notifying the Forest Service of natural resource or management problems. The Indian Peaks Wilderness has a similar program of wilderness "hosts." The Mountaineers, a four-wheel-drive club in Larimer County, has volunteer projects and work days to improve roads, and the Grand Lake Trail Groomers Association performs similar services for winter snowmobile routes. Various hiking clubs have donated hundreds of person hours to trail construction projects, and many other examples could be cited. We invite you heartily into the arena of partnership and end this *FEIS Summary* with a handshake of mutual trust and confidence for a shared future.

ADDENDUM: A GUIDE TO THE *FOREST PLAN'S* FULL DOCUMENTATION

Most readers will neither need nor want the entire set of documents associated with the new *Forest Plan* and *FEIS.* Together they total about 1,500 pages in four bound volumes. However, it may be useful for you to know generally *what is in* those documents as an aid to making further inquiries about some subject or actually researching something on your own. Many of your local libraries will have a full set of the documents, as will the Ranger District offices in Boulder, Ft. Collins, Idaho Springs, Greeley (for PNG) and Granby. Following is a quick rundown of the contents of the documents, beginning with the *Forest Plan* itself.

FOREST PLAN

Introduction: Tells you the purpose of the *Forest Plan* and its relation to other documents, then gives you a reader's guide to all its chapters, appendices and maps. Tells how the *Plan* is implemented and used, revised and amended, and how it is budgeted. Explains the distinctive roles of the Forests and Grassland and gives a rundown of the ARNF-PNG's commodities and services.

Chapter One: Forestwide Direction: The nitty gritty of the *Plan,* this chapter gives the long-term goals and objectives and the goals, standards and guidelines that govern our everyday work. These are grouped by subject and labeled and numbered for easy reference.

Chapter Two: Geographic Area Direction: This chapter occupies the bulk of the *Forest Plan,* and spells out the characteristics and goals, desired conditions and travel management plans for each of the nearly 60 geographic areas into which the ARNF-PNG is divided. For each one a map shows the location, total acreage and division into management areas.

Chapter Three: Management Area Direction: Defines each of the management areas we have discussed in this *FEIS Summary*--the "zones" that define how specialized areas will be managed. For each kind of management area, the theme, the physical/biological, social and administrative conditions to be maintained and specific standards and guidelines are spelled out in detail.

Chapter Four: Monitoring and Evaluation: Gives full details of the formal mechanisms we've put in place to keep the *Forest Plan* responsive to public needs and changing conditions. We've discussed monitoring and evaluation briefly in Part Six of this *FEIS Summary.*

Supplemental Table: A 7-page supplemental table shows you activity figures corresponding to major budget line items of ARNF-PNG activity.

Appendices: The *Forest Plan's* appendices, bound in a separate volume, are: A--National Strategic Goals; B--Key Policies and Directives System; C--Relevant Federal and State Statutes

and Other Regulations; D--Oil and Gas Leasing Supplemental Stipulations; E--Suitable Lands; F--Research Natural Areas; G--Glossary.

FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

The *FEIS* is a large technical document described best by its name: an analysis of the environmental impact of implementing the *Forest Plan.* An overview of its contents:

Chapter One: Purpose, Need, and Significant Issues: Spells out in greater detail than this *Summary,* the reasons for revising the *Forest Plan* and the choice and substance of the revision topics. Explains "staged decision making" and other "significant issues" as well as what topics are *outside* Forest Service jurisdiction.

Chapter Two: Description and Comparison of Alternatives: Gives a more complete version of most of the subjects covered in this *Summary.* It reviews how the alternatives were chosen, points common to them all, the background, theme, and desired conditions each alternative aspires to, and the alternatives considered but eliminated from further study. The chapter then compares the viable alternatives in much the same way we have in this *Summary,* but in greater detail and with more numerical data.

Chapter Three: Affected Environment and Environmental Consequences: Nearly 500 pages long, this chapter is the scientific heart of the *FEIS.* It has 26 technical sections, grouped in four main categories as follows: *Physical Elements of the Environment* (air, soil, aquatic and riparian resources, minerals and geology, heritage resources); *Biological Elements of the Environment* (overview of biological diversity, terrestrial habitat--broad-scale overview, terrestrial habitat and wildlife, fire, ecology and management of forest insects and diseases, and rangeland); *Use and Occupation of the Forests and Grassland* (timber production, recreation, roadless areas, wilderness, wild and scenic rivers, scenic resources, land uses and occupancy, National Forest/residential intermix, existing and potential ski areas, travel management, facilities and administrative sites, hazardous materials); *Resource Commitments* (discusses unavoidable adverse effects, short-term uses versus long-term productivity, and irreversible and irretrievable commitments of resources); *Social and Economic Elements* (discusses jobs, income and other social-economic aspects of the ARNF-PNG's presence in Colorado).

Though many parts of Chapter Three are technical, they have been carefully written and edited to be understandable and as free from specialized terminology as possible. Most, and often all, of their substance is comprehensible to an alert and interested adult reader. The text is supplemented with nearly 200 tables and two dozen figures, all clearly titled and coherently presented. Details of how the plans and projects of each alternative affect the environment and *other activities* are found in these technical sections in great abundance. Timber harvest, for example, is affected by the way we manage travel, fire, forest insects and diseases, recreation, and wilderness. But timber harvest itself affects how we manage scenic resources, recreation, insects and diseases, rangeland, fire, and soil and aquatic resources. Scenic resources are affected by how we manage travel, timber, wildlife, mining and oil and gas development, fire,

insects and diseases, recreation, wilderness and ski areas. The list of influences of activities upon each other is long and instructive. And, of equal importance, all activities affect the biological background against which they are set, and ecosystem management of that broad biological resource in turn affects all activities within it. The cumulative effect of these discussions shows how truly interconnected all parts and processes of the Forest are and how interconnected with them and *with each other* all human activities are. You cannot peruse the *FEIS* without realizing that with only one step into the forest humans become part of its ecology.

Supplemental Tables: Eighteen pages of tables show acreages for management areas under the different alternatives, activities and outcomes for each alternative for both the full and experienced budget levels, projected budget amounts for each alternative, and financial revenues and economic benefits.

Chapter Four: List of Preparers: Short description of Forest Service staff who researched and wrote the *Forest Plan* and *FEIS.*

Chapter Five: Recipients of the FEIS: Names of individuals and organizations who requested copies of the *FEIS* in response to our mailer in Summer 1997.

Appendices: The *FEIS'* separately bound appendices are: A--Public Involvement and Response to Comments; B--Description of the Analysis Process; C--Roadless Area Evaluation; D--Wild and Scenic River Evaluation; E--Silvicultural Systems, Logging Systems and Related Effects; F--Oil and Gas Leasing and Development; G--Management Indicator Species; Threatened, Endangered and Sensitive Species; Significant Communities and Rare Species; H--Biological Evaluation of Sensitive Species; I--Biological Assessment of Endangered and Threatened Species;
J--Bibliography.